CDR Mini System FW-R8/17/21/22

Service
Service
Service

Service Manual

SERVICING

For servicing FW-R8, the set can be divided into two parts:
1. Except for the CD-R/W module the set has to be repaired on component level.
2. The **CD-R/W module** will be **exchanged completely** in case of a failure.
   The defective CD-R/W module has to be returned for central repair.

Available circuit descriptions:	*The Basics of Compact Disc Recordable/Rewritable*	**4822 725 25242**
	3rd generation Compact Disc Recording	**3104 125 40100**

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CLASS 1
LASER PRODUCT

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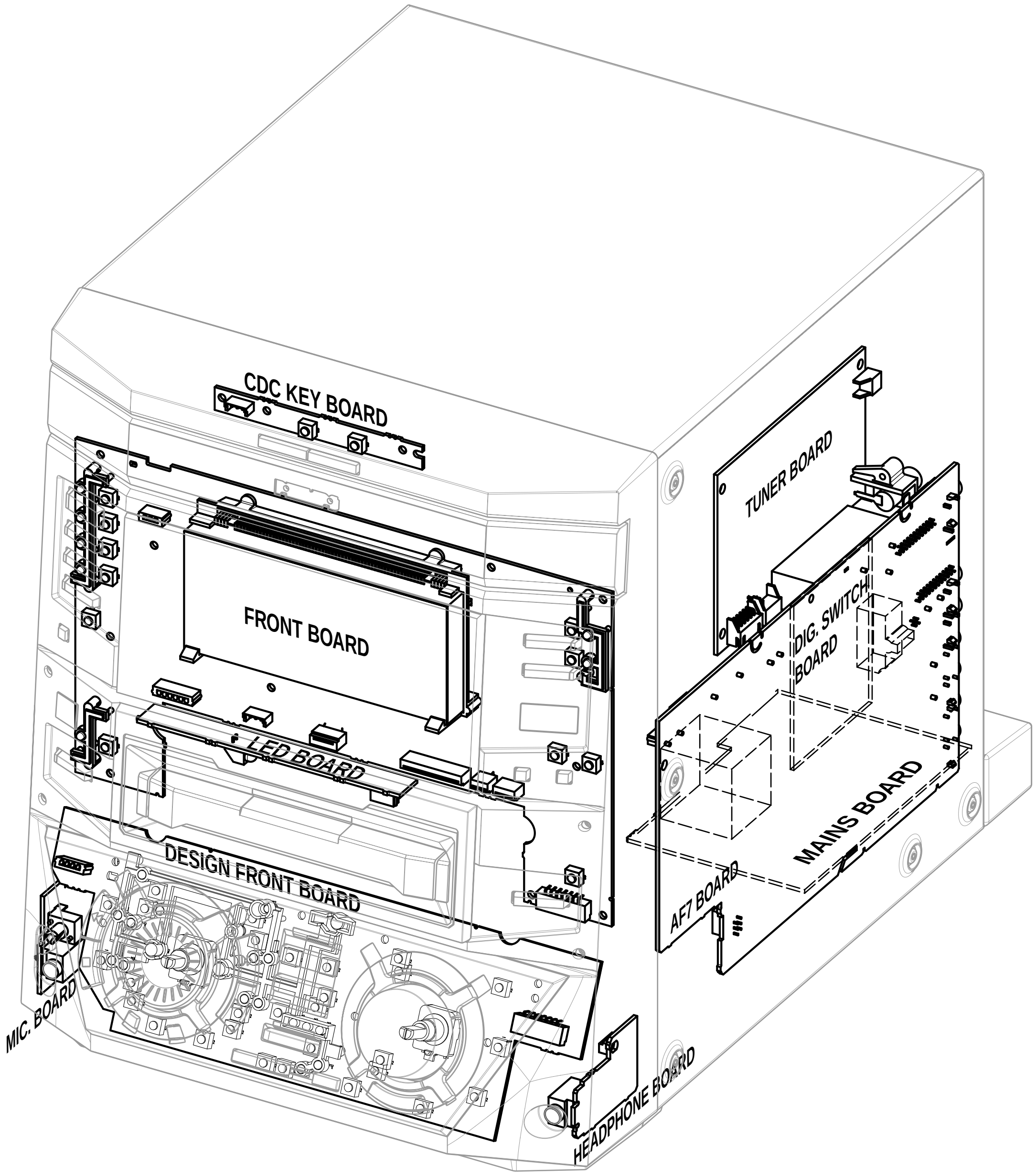
PHILIPS

Location of Printed Circuit Boards


CDC KEY BOARD
TUNER BOARD
FRONT BOARD
DIG. SWITCH BOARD
LED BOARD
MAINS BOARD
DESIGN FRONT BOARD
AF7 BOARD
MIC. BOARD
HEADPHONE BOARD

Location of PCB R8 2000 02 14

Technical Specification

General:

Mains voltage : 120 / 240V switchable (for /21)
: 230V (for /22)
: 120V (for /37)
Mains frequency : 50 ~ 60Hz
Power consumption : 155W at 1/8 P_{RATED}
: 350W at max output
: ≤15W at Stand by
: ≤2W at ECO Stand by

Tuner:

FM
Tuning range : 87.5MHz - 108MHz
Grid : 100kHz
IF : 10.7MHz
Aerial input : 75Ω
Sensitivity Mono : < 7µV (26dB S/N)
d (RF=1mV,∆f=75kHz) : 3% - typ. 2%
IF rejection : > 60dB
Image rejection : > 25dB
-3dB Limiting Point : < 23.5dBf

MW
Tuning range : 531kHz - 1062kHz
Grid : 9kHz
IF : 450kHz ±1kHz
Sensitivity at 26dB S/N : < 4.0mV/m
d (RF=50mV,m=80%) : < 5% - typ. 3%
IF rejection : > 45dB
Image rejection : > 28dB

Amplifier:

Output power : 2 x 100W at 6Ω
Headphone : 3.5mm stereo jack
Frequency response : 20Hz - 20kHz (-3dB) Limit
Equalizer : Digital Sound Control

Input sensitivity
Aux/Line : 500mV ±2dB
Microphone : 2.5mV ±2dB at 1kHz

CDC unit:

Frequency response within : 20Hz - 20kHz at ±3dB
Signal/Noise ratio : > 94dB (A-weighted)
Distortion at 1kHz,0dB : -90dB
Channel unbalance : < 0.3dB
Channel crosstalk at 1kHz : -60dB
De-emphasis : 0 or 15/50 µS
Laser
Output power : ≤500µW
Wave length : 780nm ±20nm

CDR unit:

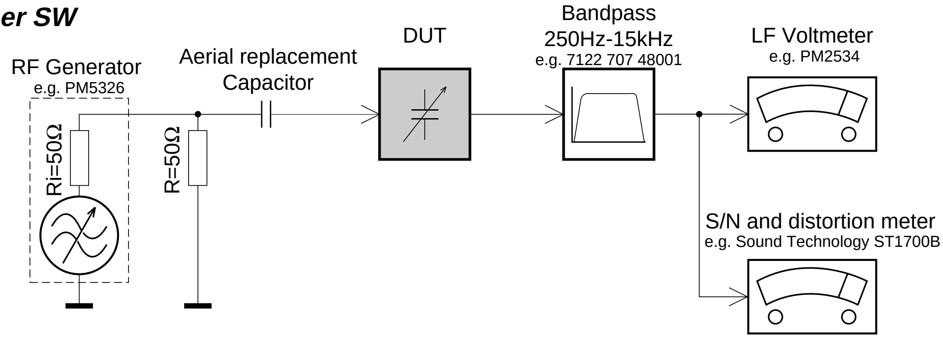
CD Playback:
Frequency response within : 20Hz - 20kHz at ±3dB
Signal/Noise ratio : > 90dB (A-weighted)
Distortion at 1kHz,0dB : -80dB
Channel unbalance : < 1dB
Channel crosstalk at 1kHz : -60dB
De-emphasis : 0 or 15/50 µS

Analog recording - digital playback:
Frequency response within : 20Hz - 20kHz at ±3dB
Signal/Noise ratio : > 84dB (A-weighted)
Distortion at 1kHz,0dB : -77dB
Channel unbalance : < 1dB
Channel crosstalk at 1kHz : -60dB
De-emphasis : 0 or 15/50 µS

Laser
Output power : ≤1mW during reading
: ≤20mW during writing
Laser class 3B
Wave length : 780nm ±20nm

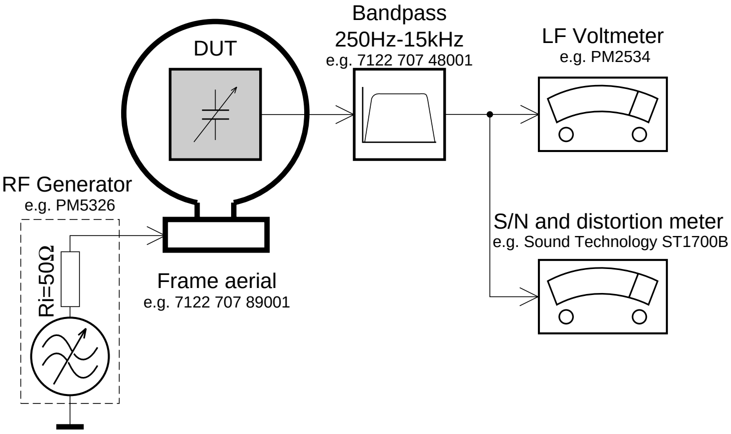
Measurement Setup

Tuner SW


RF Generator
e.g. PM5326
Ri=50Ω
R=50Ω
Aerial replacement
Capacitor
DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
S/N and distortion meter
e.g. Sound Technology ST1700B

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

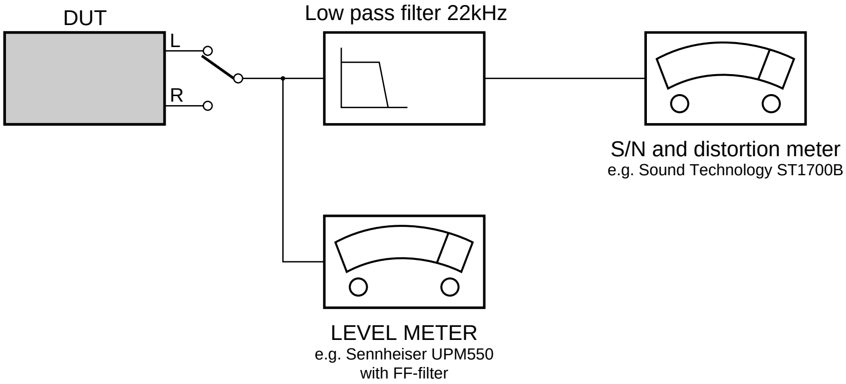
Tuner AM (MW,LW)


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
Frame aerial
e.g. 7122 707 89001
S/N and distortion meter
e.g. Sound Technology ST1700B

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.

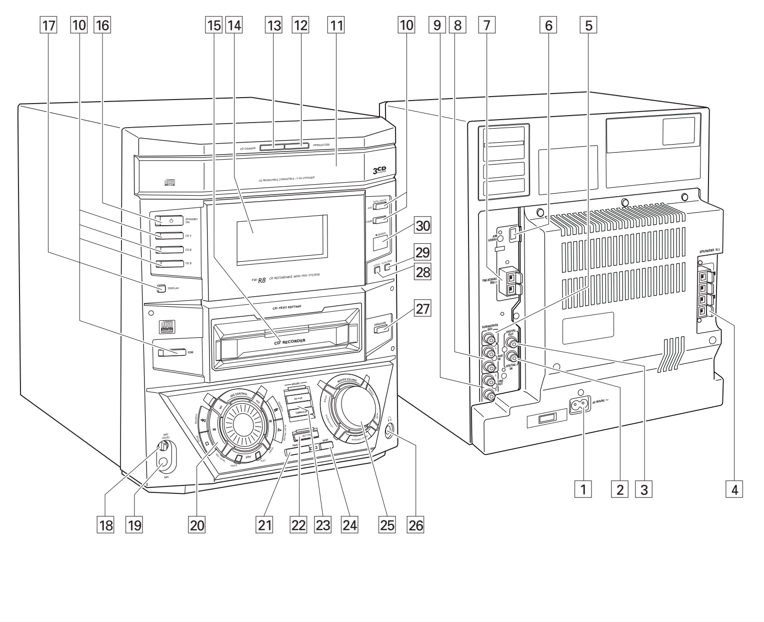
CD

Use Audio Signal Disc SBC429   4822 397 30184 (replaces test disc 3)
L.P.F. = 13 th order filter 4822 395 30204


DUT
L
R
Low pass filter 22kHz
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

RC5 Codes

Remote control key	*System Code*	*Command Code*	*Remote control key*	*System Code*	*Command Code*
Standby	17,20, 21, 26	12	ALARM	16	89
CD1	20	55	SLEEP	16	38
CD2	20	56	BRIGHTNESS	16	71
CD3	20	57	REPEAT	20, 26	29
CDR	26	63	SHUFFLE	20, 26	28
Tuner	17	63	TRACK INCREMENT	26	114
Aux	21	63	VOLUME +	16	16
1(ABC)	17,20, 21, 26	01	VOLUME -	16	17
2 (DEF)	17,20, 21, 26	02	►	20, 26	53
3 (GHI)	17,20, 21, 26	03	❚❚	20, 26	48
4 (JKL)	17,20, 21, 26	04	|◄	17,20, 21, 26	33
5 (MN)	17,20, 21, 26	05	►|	17,20, 21, 26	32
6 (OPQ)	17,20, 21, 26	06	◄◄ **CD, CDR MODE**	20, 26	50
7 (RST)	17,20, 21, 26	07	◄◄ **AUX, TUNER MODE**	17, 21	31
8 (UVW)	17,20, 21, 26	08	►► **CD, CDR MODE**	20, 26	52
9 (XYZ)	17,20, 21, 26	09	►► **AUX, TUNER MODE**	17, 21	30
0 (Space)	17,20, 21, 26	00	■	20, 26	54
YES	17,20, 21, 26	87	INCREDIBLE SURROUND	16	64
NO	17,20, 21, 26	49	PURE	16	52
EDIT (TEXT)	17,20, 21, 26	82	LOUDNESS	16	50
PROGRAM	20, 26	36	BALANCE L	16	27
PROGRAM **TUNER MODE**	17	122	BALANCE R	16	26
MUTE	16	13			



On the back

1	**AC MAINS ~**	***After all other connections have been made***, connect the power cord to the power outlet. ***For optimal performance use only the original power cable.***
2	**DIGITAL IN**	connect to the coaxial output of a digital appliance
3	**DIGITAL OUT**	connect to the coaxial input of a digital appliance
4	**SPEAKERS 6 Ω L/R**	connect to the supplied speakers
5	**SUBWOOFER OUT**	connect to the input of a subwoofer
6	**AM AERIAL**	connect the supplied loop antenna here
7	**FM AERIAL 300 Ω**	connect the supplied wire antenna here
8	**AUX IN L/R**	connect to the analog audio output of an additional appliance
9	**LINE OUT L/R**	connect to the analog audio input of an additional appliance

On the front

10	**Source selection**	
	CD 1, CD 2, CD 3	selects the CD changer, switches to CD 1, CD 2 or CD 3
	CDR	selects the CD recorder
	TUNER	selects the tuner
	DIGITAL / ANALOG AUX	selects the input for an additional appliance
11		CD changer tray
12	**OPEN/CLOSE**	opens and closes the CD changer tray
13	**CD CHANGE**	selects the next disc tray
14		display
15	**CD RECORDER**	CD recorder tray
16	**⏻ STANDBY ON**	switches the unit on and to standby
17	**DISPLAY**	selects display information/text
18	**MIC LEVEL**	adjusts the microphone volume
19	**MIC**	microphone jack
20	**Multiple function control**	
	Rotary control:	
	⏮ JOG CONTROL ⏭	CDC, CDR: selects the previous/next track TUNER: selects the previous/next preset tuner station
	Keys to press:	
	YES	confirms a selection
	▶▶ SEARCH	CDC, CDR: searches forward, reviews the tracks in a program, controls the cursor in different menus TUNER: tunes to a higher radio frequency
	▶ PLAY/PAUSE	starts and interrupts playback/recording
	PROG	opens/closes the program menu
	EDIT TEXT	enters/exits the text edit menu
	EDIT TRACK	enters/exits the track edit menu
	REC LEVEL	enables the rotary control to adjust the level for recordings
	■ STOP	stops CD play/record, closes program memory
	◀◀ SEARCH	CDC, CDR: searches backward, reviews the tracks in a program, controls the cursor in different menus TUNER: tunes to a lower radio frequency
	NO	cancels a selection
21	**FINALIZE**	finalizes and unfinalizes recordings
22	**REC TYPE**	enters/exits the recording menu
23	**RECORD**	
	CD→CD	selects high speed recording and automatic finalizing of current CD
	COMPILE CD	selects high speed recording and automatic finalizing of current program
24	**ERASE**	erases recordings
25	**Sound control**	
	MASTER VOLUME	adjusts the volume
	TREBLE	sets the treble level
	PURE	switches bass and treble settings on/off
	INCREDIBLE SURR.	creates an incredibly wide stereo effect
	LOUDNESS	boosts treble and bass
	BASS	sets the bass level
26	🎧	3.5 mm headphone jack
	Note: Connecting the headphones will switch off the speakers.	
27	**OPEN/CLOSE**	opens and closes the CD recorder tray
28	**CD TEXT**	switches through CD text information
29	**CLOCK/TIMER**	selects the clock function, activates and deactivates the timer
30	**iR SENSOR**	sensor for the infrared remote control

Note: You will recognize that various keys will be illuminated on the unit depending on the different modes or programs you are in. This is for your guidance in order to facilitate the finding of the relevant keys for selection.

Power

The type plate is located on the rear of the unit.

1 Check whether the power voltage as shown on the type plate corresponds to your local power voltage. If it does not, consult your dealer or service organization.

2 ***Make sure all connections have been made before switching on the power supply.***

3 Connect the supplied power cable to AC MAINS ~ and to the power outlet. This switches on the power supply.

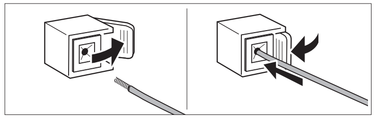
For optimal performance use only the original power cable.

When the unit is switched to standby, it is still consuming some power. To disconnect the unit from the power completely, remove the power cable from the power outlet.

To avoid overheating of the unit, a safety circuit has been built in. Therefore, your unit may disconnect under extreme conditions. If this happens, switch the unit off and let it cool down before reusing it.

Speaker connections

The speaker connections are click-fit connectors. Use them as shown below.



1 Connect the colored (or marked) wire to the red terminal and the black (or unmarked) wire to the black terminal.

2 Connect:
- – Left speaker to L (red and black)
- – Right speaker to R (red and black)

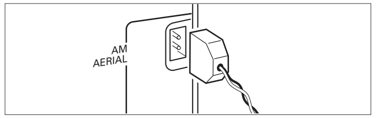
Antenna connections

AM antenna
The supplied loop antenna is for indoor use only.

1 Fit the plug of the loop antenna to AM AERIAL as shown below.

2 Position the antenna as far as possible from a TV, VCR or other radiation sources.

3 Turn the antenna for optimum reception.



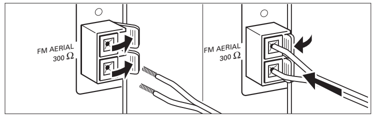
FM antenna
The supplied wire antenna can only be used to receive nearby stations. For better reception we recommend using a cable antenna system or an outdoor antenna.

1 Open the FM AERIAL 300 Ω click-fits by pushing the lever down as shown below.

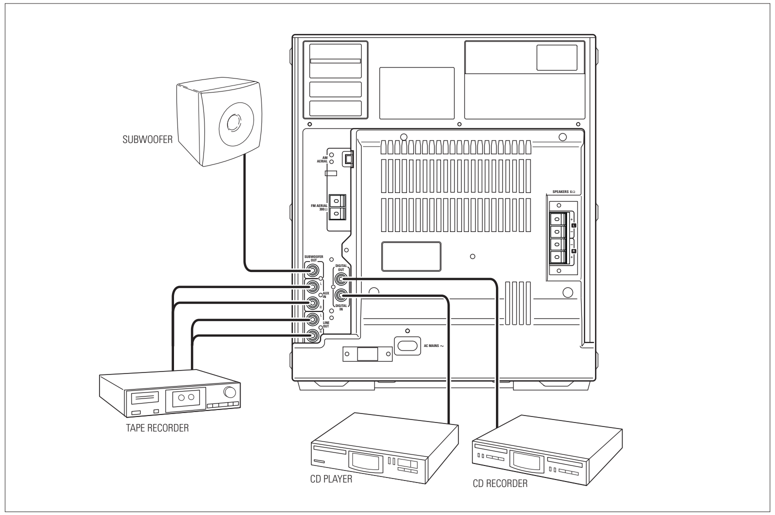
2 Insert each wire of the antenna into one hole.

3 Close the click-fits using the lever.

4 Move the antenna in different positions for optimum reception.



The unit complies with the FCC-Rules, Part 15 and with 21 CFR 1040.10. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.



Analog audio connections

AUX IN L/R
It is possible to use an additional appliance, e.g. tape recorder, TV or VCR, with the unit.

1 Insert the red plug of a cinch cable to the red jack AUX IN R and insert the white plug to the white jack AUX IN L.

2 Connect the other end of the cinch cable to the audio outputs of the additional appliance.

3 Press DIGITAL / ANALOG AUX repeatedly to select the analog input for the appliance.
→ `AUX Analog` is displayed.

4 Operate your appliance as usual and adjust volume and sound with the unit.

Note: It is not possible to connect a turntable directly to AUX IN L/R. *If you wish to use a turntable with the unit, you have to connect an amplifier to* AUX IN L/R *on the unit. Then connect the turntable to the amplifier.*

LINE OUT L/R
You can use these outputs for playback or recording on any analog audio equipment e.g. amplifier or tape recorder.

- Use a cinch cable to connect the analog audio inputs of the additional appliance with LINE OUT L/R on the unit and operate your appliance as usual.

Digital audio connections

DIGITAL IN
You can use this coaxial input for recordings from any digital audio equipment with a digital coaxial output e.g. CD player or DVD player.

1 Use a coaxial cable to connect the coaxial output of the additional appliance with DIGITAL IN on the unit.

2 Press DIGITAL / ANALOG AUX repeatedly to select the digital input for the appliance.
→ `AUX Digital` is displayed.

3 Operate your appliance as usual.

DIGITAL OUT
You can use this coaxial output for recordings on any digital audio equipment with a digital coaxial input e.g. CD recorder.

- Use a coaxial cable to connect the coaxial input of the additional appliance with DIGITAL OUT on the unit and operate your appliance as usual.

Connecting a subwoofer

A subwoofer can be used to enhance the bass performance of your unit dramatically.

1 Use a cinch cable to connect the input of the subwoofer with SUBWOOFER OUT at the unit.

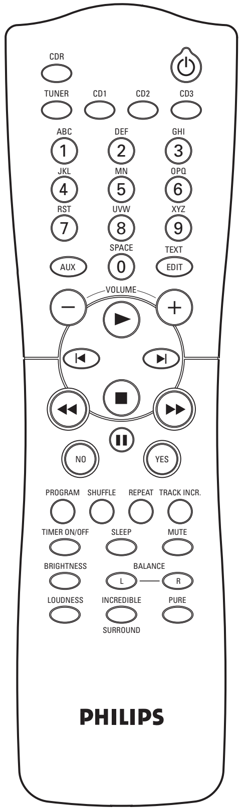
2 Follow the instructions supplied with the subwoofer.

REMOTE CONTROL

Remote control buttons

⏻	switches the unit to standby
CDR, TUNER, CD1, CD2, CD3, AUX	selects the sources
Number/alphabet keys	
1–0	keys in numbers for tracks or stations
ABC – XYZ	keys in letters for text
SPACE	keys in a space within the text
EDIT TEXT	enters the text edit menu
− VOLUME	decreases the volume
+ VOLUME	increases the volume
▶	starts playback/recording
⏮	CDC, CDR: selects the previous track TUNER: selects the previous preset tuner station
⏭	CDC, CDR: selects the next track TUNER: selects the next preset tuner station
■	stops CD play/recording, closes program memory
▶▶	CDC, CDR: searches forward, reviews the tracks in a program, controls the cursor in different menus TUNER: tunes to a higher radio frequency
◀◀	CDC, CDR: searches backward, reviews the tracks in a program, controls the cursor in different menus TUNER: tunes to a lower radio frequency
❚❚	interrupts playback/recording
YES	selects a selection
NO	cancels a selection
PROGRAM	opens/closes the program menu
SHUFFLE	plays tracks in random order
REPEAT	repeats a track, the entire CD(RW) or the program
TRACK INCR.	selects automatic or manual increment of a track
TIMER ON/OFF	activates and deactivates the timer
SLEEP	activates the sleep timer
MUTE	mutes the sound
BRIGHTNESS	controls the brightness of the display
L BALANCE	adjusts the volume balance to the left speaker
R BALANCE	adjusts the volume balance to the right speaker
LOUDNESS	boosts treble and bass
INCREDIBLE SURROUND	creates an incredibly wide stereo effect
PURE	switches bass and treble settings on/off

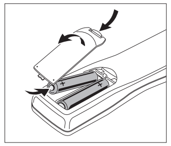
Note: Always press the source key of the source you wish to control (e.g. CD1*) before selecting the desired function key (e.g.* SHUFFLE*).*



Remote control batteries

Open the battery compartment of the remote control and insert 2 alkaline batteries, type **AA** (R06, UM-3).

Do not use old and new or different types of batteries in combination.



Remove batteries if they are dead or if the remote control is not to be used for a long time.

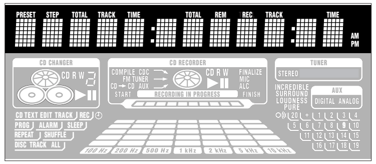
Batteries contain chemical substances, so they should be disposed of properly.

DISPLAY

Display

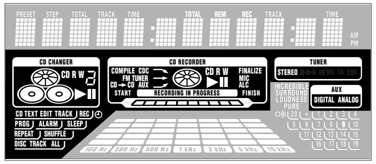
The display of the unit is divided into 3 sections, which show you the following:

Information area



This area is used for feedback of the CD changer, CD recorder, tuner frequencies, menu options, values and scrolling text messages.

Status lights and flags



Flags

CD TEXT	CD text is available
CD TEXT EDIT	text edit menu is active
EDIT TRACK	track edit menu is active
REC 🕘	record timer is selected
PROG	program menu is active
🕘	clock is selected
ALARM 🕘	alarm timer is selected
SLEEP	sleep timer is selected
REPEAT DISC	selected disc is played repeatedly
REPEAT TRACK	current track is played repeatedly
REPEAT ALL	all discs in the CD changer (or the program) are (is) played repeatedly
SHUFFLE	either all tracks of the program or of the loaded disc(s) in the CD changer or CD recorder are played in random order

CD Changer

💿💿💿	number of disc trays loaded
💿 ▶	playback is activated
💿 ❚❚	playback is interrupted
CD 1, 2, 3	disc tray 1, 2 or 3 is selected and loaded with a pre-recorded CD, finalized CDR or CDRW
CD R 1, 2, 3	disc tray 1, 2 or 3 is selected and loaded with an unfinalized CDR
CD RW 1, 2, 3	disc tray 1, 2 or 3 is selected and loaded with an unfinalized CDRW

CD Recorder

COMPILE CDC → 💿	current program is being recorded with high speed dubbing and auto finalize
FM TUNER → 💿	FM station is being recorded
CD→CD → 💿	current disc is being recorded with high speed dubbing and auto finalize
AUX → 💿	material from an external source is being recorded
💿 ▶	playback is activated
💿 ❚❚	playback is interrupted
RECORDING IN PROGRESS	recording in progress
START ▬▬▬▬ FINISH	status of recording progress is shown
CD	pre-recorded CD, finalized CDR or CDRW inserted
CD R	unfinalized CDR inserted
CD RW	unfinalized CDRW inserted
FINALIZE	(un)finalizing will start
MIC	microphone input is being used
ALC	auto level control is active

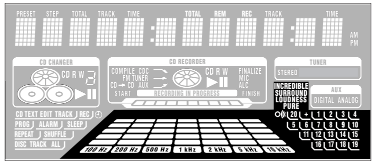
Tuner

STEREO	FM station is being received in stereo

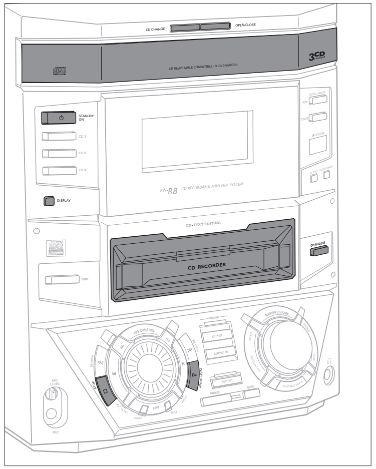
AUX

DIGITAL	digital input in use for external source
ANALOG	analog input in use for external source

Music calendar, sound lights and remote control



INCREDIBLE SURROUND	Incredible Surround is active
LOUDNESS	Loudness is active
PURE	bass and treble settings are switched off
O((	command from remote control is being received
Music calendar	
1–20	CDC, CDR: actual track number played, number of tracks on a disc/program TUNER: preset number of tuned station
+	CDC, CDR: disc or program contains more than 20 tracks TUNER: more than 20 radio stations are stored
▦	spectrum analyzer



Switching on, switching to standby

- **To switch the unit on** press ⏻ STANDBY ON on the unit.

- **To switch the unit to standby** press ⏻ STANDBY ON again on the unit (⏻ on the remote control).

Loading the CD changer, CD recorder

Important!

1) This system is designed for regular CD(RW)s. Therefore, do not use any accessories such as disc stabilizer rings or CD treatment sheets, etc. as offered on the market, because they may cause jamming of the changer mechanism.

2) Do not load more than one disc into one disc tray.

1 ***CD changer:***
Press OPEN/CLOSE on the unit to open the CD changer tray.
→ `Open CDC` is displayed and the tray is opened.

CD recorder:
Press OPEN/CLOSE on the unit to open the CD recorder tray.
→ `Open CDR` is displayed and the tray is opened.

2 ***CD changer:***
You can load up to three discs in the CD changer for continuous playback without interruption. Insert an audio disc (printed side up) in the right disc tray.

- You can load another disc in the left disc tray.
- To insert a third audio disc, press CD CHANGE on the unit.
  → The CD carousel will rotate until the empty disc tray is at the right hand side.

CD recorder:
Insert an audio disc (printed side up) in the tray.

3 ***CD changer:***
Press OPEN/CLOSE on the unit again to close the tray.
→ The tray is closed and `Reading` is displayed.
→ If an unfinalized disc is inserted, `Initializing` will be displayed.
→ `CD`, the disc tray number, the total number of tracks and the total playing time of the disc in the last selected disc tray are displayed. The track numbers light up in the music calendar.

CD recorder:
Press OPEN/CLOSE on the unit again to close the tray.
→ The tray is closed and `Reading` is displayed.
→ If an unfinalized disc is inserted, `Initializing` will be displayed.
→ `CDR`, the total number of tracks and the total playing time of the disc are displayed. The track numbers light up in the music calendar.

Playing a CD(RW)

1 Press ▶ PLAY/PAUSE (▶ on the remote control) to start playback.

CD changer:
→ `CD`, the disc tray number, the current track number and elapsed playing time are displayed. The current track number is also blinking in the music calendar.

CD recorder:
→ `CDR`, the current track number and elapsed playing time are displayed. The current track number is also blinking in the music calendar.

- To switch through the following information, repeatedly press DISPLAY on the unit:
  → Track number, remaining playing time of current track
  → Track number, remaining playing time of disc
  → Track number, actual playing time of current track

2 Press ■ STOP (■ on the remote control) to stop playback.

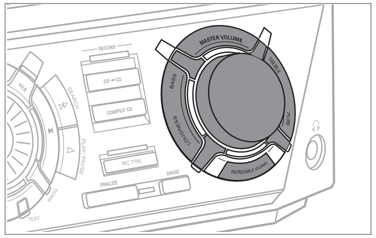
CD changer:
→ `CD`, the disc tray number, the total number of tracks and the total playing time of the disc are displayed.

CD recorder:
→ `CDR`, the total number of tracks and the total playing time of the disc are displayed.

- To switch through the following information, repeatedly press DISPLAY on the unit:
  → Total number of tracks, total playing time of disc
  → CD text is displayed.

- You can interrupt playback by pressing ▶ PLAY/PAUSE (❚❚ on the remote control).
  → The time where playback was interrupted is blinking.

- To resume playback press ▶ PLAY/PAUSE (▶ on the remote control) again.



Sound control

Volume adjustment

- Adjust the volume by using MASTER VOLUME (− VOLUME/ + on the remote control).
  → The volume level in `dB` (decibel) is displayed.

Incredible Surround

Stereo sound is determined by the distance between the front speakers. Incredible Surround enables you to enjoy an incredibly wide stereo effect, regardless of the speakers' distance.

- Press INCREDIBLE SURR. (INCREDIBLE SURROUND on the remote control) to switch the surround sound effect either on or off.
  → **INCREDIBLE SURROUND** is shown and `Incredible Surround` is displayed if the surround sound effect is on.

Note: The effect of Incredible Surround may vary with different types of music.

Treble and Bass level adjustment

1 Press TREBLE or BASS on the unit.
→ The volume rotary is activated to select the treble/bass settings.

2 Turn the volume rotary to adjust the treble or bass.
→ `Treble` or `Bass` and the actual value (between –5 and +5) is displayed briefly.

Note: If the volume rotary is not turned for 5 seconds, it will switch back to volume.

PURE

- Press PURE repeatedly to switch bass and treble settings either on or off.
  → **PURE** is shown and `Pure` is displayed if bass and treble settings are switched off.
  → `Optimal` is displayed if preset bass and treble settings are switched on.
  → `Personal` is displayed if personal preset bass and treble settings are switched on.

LOUDNESS

- Press LOUDNESS to switch loudness either on or off.
  → **LOUDNESS** is shown and `Loudness` is displayed if loudness is on.

MUTE

This feature allows you to temporarily switch off the sound without switching off the unit.

1 Press MUTE on the remote control to switch off the sound.
→ `Mute` is displayed and playback/recording will be continued without sound.

2 Press MUTE on the remote control again to switch on the sound again.

Speaker balance

It is possible to adjust the relative volume balance between the connected front speakers.

- Press L BALANCE or R BALANCE on the remote control to adjust the relative volume of the left or right front speaker.
  → `Balance L` (or `R`) and the actual volume of the left (or right) front speaker are displayed.
  → When the volume of both speakers is balanced, `Balance L=R` is displayed.

Demo mode

The demo mode displays various features of the unit and will start automatically.

- *If any source key is pressed:*
  → The unit switches to the selected source.
  If ⏻ STANDBY ON *is pressed:*
  → The unit switches to standby. After a few seconds, the demonstration will start again.

Cancelling the demo mode

- Keep ■ STOP on the unit pressed for at least 3 seconds to cancel the demo mode.
  → The demo mode is cancelled permanently. The unit switches to standby. A few seconds later the unit switches to an economy power save mode.

Selecting a disc on the CD changer

- Press either CD 1, CD 2 or CD 3 to select a particular disc.

Selecting a track and searching

Selecting a track during playback

- Rotate ⏮ JOG CONTROL ⏭ (press ⏮ or ⏭ on the remote control) to skip to the beginning of the previous or next track on the selected disc.
  →Playback continues with the selected track.

Selecting a track when playback is stopped

1 Rotate ⏮ JOG CONTROL ⏭ (press ⏮ or ⏭ on the remote control) to skip to the required track number.

2 Press ▶ PLAY/PAUSE (▶ on the remote control) to start playback.
→Playback starts with the selected track.

Note: *Instead of using ⏮ or ⏭ on the remote control, you can also directly key in the required track number by using the numerical keys. For 2-digit numbers, press the keys in rapid succession.*

Searching for a passage during playback

1 Keep ◀◀ SEARCH or ▶▶ SEARCH (◀◀ or ▶▶ on the remote control) pressed to find a particular passage in a backward or forward direction.
→Searching is started and playback continues at a low volume. After 3 seconds, the search speeds up with volume muted.

2 Release the key at the desired passage.
→Normal playback continues.

Note: *During* SHUFFLE, *while repeating a track or while playing a program, searching is only possible within the current track.*

SHUFFLE and REPEAT

Repeating a track, the disc or the program

1 Repeatedly press REPEAT on the remote control during playback to select either:
→**REPEAT TRACK**: The current track is played repeatedly.
→**REPEAT DISC**: The entire selected disc is played repeatedly.
→**REPEAT ALL**: All discs in the CD changer (or the program) are (is) played repeatedly.

2 Playback starts in the chosen mode.

3 To return to normal playback, press REPEAT on the remote control until the display indication disappears.

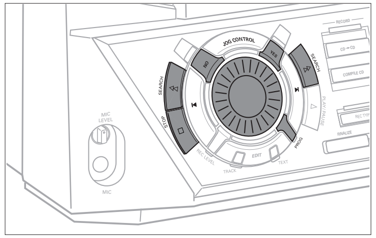
Note: **REPEAT DISC** *is not possible during* SHUFFLE *or while playing a program.*

Playing tracks in random order

1 Press SHUFFLE on the remote control during playback.
→**SHUFFLE** is shown and either all tracks of the program or of the loaded disc(s) in the CD changer or CD recorder are played in random order.

2 To return to normal playback, press SHUFFLE again.

CD text



Programming track numbers

You can select tracks and store them either in the CD changer or CD recorder memory. If you use the program for playback you can choose one of the two memories, else if you like to specify tracks for recording, use the CD changer memory only! You can store any track more than once.

1 Load the desired disc(s) in the disc tray(s).

2 Press either CD 1, CD 2, CD 3, or CDR to select the disc.

3 Press PROG on the unit (PROGRAM on the remote control).
→**PROG** starts blinking and `Program` is displayed.

4 ***If either CD 1, CD 2 or CD 3 is selected:***
Rotate ⏮ JOG CONTROL ⏭ to select either:
→`CD1` (or `2`, `3`) `All`: All tracks of CD 1 (or 2, 3) will be programmed.
→`CD1` (or `2`, `3`) and track number: The track number of CD 1 (or 2, 3) will be programmed.

If CDR is selected:
Rotate ⏮ JOG CONTROL ⏭ (press the numerical keys on the remote control; for 2-digit numbers, press the keys in rapid succession) to select a track number.

5 Press YES to store your selection in the memory.
→The number of programmed tracks (**STEP**), `Prog` and the total program time are displayed. The track number blinks in the music calendar.

6 Select and store all desired tracks in this way.

7 Press PROG on the unit (PROGRAM on the remote control) to end programming.
→**PROG** stays shown and the program is currently available.

Note: *If the maximum number of programmable tracks is reached, the display shows* `Program full`.

Erasing a track from the program

1 If necessary, press ■ STOP on the unit (■ on the remote control) to stop playback.

2 Press either CD 1, CD 2, CD 3, or CDR to select the desired memory.

3 Press PROG (PROGRAM on the remote control), followed by ◀◀ SEARCH or ▶▶ SEARCH (◀◀ or ▶▶ on the remote control) to move through the program steps.
→The track number at the selected step and the total program time are displayed.

4 Press NO to remove the track from the program.
→`Cleared` is displayed briefly.
→The next programmed track number will move up to this position and is displayed together with the step number and the remaining total program time.

Clearing the program

1 If necessary, press ■ STOP on the unit (■ on the remote control) to stop playback.

2 Press NO.
→`Clear Prog?` is displayed.

3 Press YES to clear the program.
→`Prog Cleared` will be displayed and **PROG** goes off.

Note: *When you open the CD recorder tray or the CD changer tray the respective program will be cleared.*

Making a program for recording

1 Select and store all desired tracks in the CD changer memory (see “Programming track numbers”).

2 Enter the recording menu (see “Internal recording”).

- If the total time of the program is of larger size than the remaining recording time of the CDR(W):
  →`Not fitting!` will be displayed briefly, followed by the remaining recording time and `Record Prog?`
  If you nevertheless start recording, only those tracks of the program that fit onto the CDR(W) will be recorded in entirety.

- To change the program, press NO.
  →`Edit Program` will be displayed briefly, **PROG** and the time of the program start blinking. Now you can change the program (see “Programming track numbers”, “Erasing a track from the program” and “Clearing the program”).

ABOUT RECORDING

Basic information

The CD recorder deck offers you 3 main functions:

- **Recording** from the internal CD changer and tuner or from a selected external source
- **Finalizing** your CDR(W) discs and **unfinalizing** your CDRW discs
- **Erasing** a CDRW disc

The recording procedure is the same for CDR and CDRW discs. ***Make sure the CDR(W) is absolutely free of scratches and dust particles.***

For recordings, the minimum track length is 4 seconds. You can record up to a maximum of 99 tracks on a disc. The minimum of recording time left on the disc is 7 seconds. Otherwise Does not fit is displayed and you cannot enter the record standby mode.

> ***DO NOT FORGET TO FINALIZE!***
> *Finalizing a CDR(W) disc is a simple procedure, necessary to:*
> - *play a recorded CDR on a standard CD player or*
> - *play a recorded CDRW on a CDRW compatible CD player and CD recorder.*

Copyright protection

The **S**erial **C**opy **M**anagement **S**ystem (SCMS) prevents the making of a digital copy from a digital copy. The system allows making a digital recording from the original, however in some countries this may require the authorization of copyright holders.

When you try to record copy protected material from an external source, Copy Protect will be displayed. No further digital recording is possible then.

When you try to record copy protected material from the internal CD changer, no digital recording is possible, however the CD recorder will automatically switch to analog recording.

Recording CD text

If the original CD has CD Text, this text will be recorded automatically, provided that the CD text is not copy protected. In that case, recording of CD text will not be possible and Text Protect will be displayed.

Direct Line Recording (DLR)

The CD recorder is equipped with the high-performance **D**irect **L**ine **R**ecording technique. It ensures a perfect recording of the source material, meaning a true “bit for bit” recording. DLR will always become active when you make normal recordings in listen mode.

Auto Level Control (ALC)

Auto **L**evel **C**ontrol ensures that the tracks on the recorded disc have a similar volume level. At all times the already recorded tracks of the CDR(W) disc will be taken as reference for the volume level of the following recordings. ALC is active when **ALC** is shown.

Auto level control becomes active when:

- COMPILE CD is being used,
- a disc, a track or a track edit is being high speed recorded and the CDR(W) has recordings on it,
- a program (consisting from more than one disc) from the CD changer is being high speed recorded, or
- CD→CD is being used and the CDR(W) has recordings on it.

Auto level control will not become active when:

- CD→CD is being used and the CDR(W) has no recordings on it,
- making recordings from the FM tuner,
- making recordings from an external source, or
- making normal recordings in listen mode.

REC LEVEL key

You can adjust the reference record level. This is also possible when ALC is active. This feature can be used for fading your recordings in or out.

1 Keep REC LEVEL on the unit pressed to enable the rotary control to adjust the record level.

2 Turn the rotary control to the left to adjust the desired record level.
→ The actual record level (in dB) will be displayed.

- The record level is reset after the unit has been switched to standby.

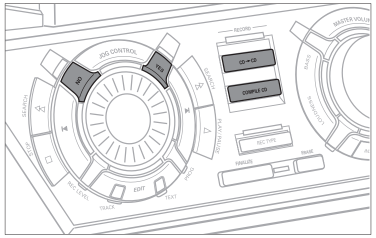
INTERNAL RECORDING

Recording modes

For internal recordings you can record from the internal CD changer or tuner. You can choose from the following recording modes:

- **High speed recording and automatic finalizing: Fast and easy!** Record and finalize your CDR(W) in one quick step while the sound is muted. You can record the current CD or a program from the CD changer.
- **High speed recording:**
  Record your CDR(W) fast while the sound is muted. You can record an entire CD, a track, a program or a track edit from the CD changer.
- **Normal recording and listening:**
  Listen to the recording while you are making it. You can record an entire CD, a track, a program or a track edit from the CD changer.
- **Manual recording:**
  Start and stop your recording manually while listening to it. You can do either microphone recordings or radio recordings from the FM tuner.

High speed recording and automatic finalizing



High speed recording and automatic finalizing of the current disc

1 Make sure the CDR(W) is absolutely free of scratches and dust particles.

2 Press CD→CD on the unit to enter the recording mode.
→ Both decks will be selected in the display, the arrow starts blinking. The remaining recording time of the CDR(W), the total playing time of the source CD and Record CD1 (or 2, 3)? are displayed.

3 Press YES to start recording and finalizing.
→ The arrow lights, **RECORDING IN PROGRESS** is shown, high speed recording and finalizing start, and the actual recording time remaining starts to count down.

Note: *If a program was already available before pressing* CD→CD*, this will be ignored.* **PROG** *goes off and the current disc will be recorded. After finishing the recording,* **PROG** *is shown and the program is available again.*

High speed recording and automatic finalizing (optional) of the current program

1 Make sure the CDR(W) is absolutely free of scratches and dust particles.

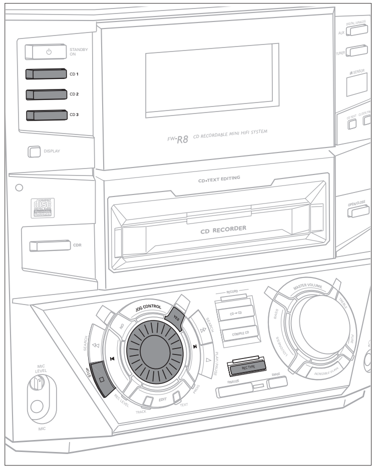
2 Press COMPILE CD on the unit to enter the record mode.
→ Both decks will be selected in the display, the arrow starts blinking. The remaining recording time of the CDR(W), the total playing time of the source CD and Record Prog? are displayed.

3 Press either:
YES to confirm,
or
NO to change the program.
→ **PROG** starts blinking. Now you can change the program (see “Program”) and return to the record mode by pressing COMPILE CD.

4 Auto Fin? is displayed.
Press either:
YES, if the CDR(W) is to be finalized after recording,
or
NO, if the CDR(W) is not to be finalized after recording.
→ The arrow lights, **RECORDING IN PROGRESS** is shown, high speed recording and finalizing (if selected) start and the actual recording time remaining starts to count down.

Note: *If no program is available and you press* COMPILE CD*, you enter immediately into the program menu. Start your programming and return to the record mode by pressing* PROGRAM *or* COMPILE CD.

> ***DO NOT FORGET TO FINALIZE!***
> *Finalizing a CDR(W) disc is a simple procedure, necessary to:*
> - *play a recorded CDR on a standard CD player or*
> - *play a recorded CDRW on a CDRW compatible CD player and CD recorder.*



High speed recording

High speed recording of an entire disc, a track, a program or a track edit

1 Make sure the CDR(W) is absolutely free of scratches and dust particles.

2 Press either CD 1, CD 2 or CD 3 to select the disc from which you wish to record.

3 Press REC TYPE on the unit to enter into the recording menu.

4 Rotate ⏮ JOG CONTROL ⏭ to select one of the following high speed recording modes:

If a disc from the CD changer is selected:

→ CD Fast?: for high speed recording of an entire disc
- Continue with step 5.

→ Track Fast?: for high speed recording of a track
- Press YES to confirm.
- Rotate ⏮ JOG CONTROL ⏭ to select the track.
  → Rec Tr and the track number is displayed.
- Continue with step 6.

If CD changer program mode is available:

→ Prog Fast?: for high speed recording of the selected disc or of the program

If CD changer track edit mode is available:

→ A-B Fast?: for high speed recording of the A–B track

5 Press YES to confirm your selection.
→ Both decks will be selected in the display, the arrow starts blinking. The remaining recording time of the CDR(W), the total recording time of the CDR(W) and either Record CD1 (or 2, 3)?, Record Prog? or Record A-B? is displayed.

Note: When the CDR(W) already contains a recording, ALC *will also become active and* **ALC** *will be shown.*

6 Press YES to start high speed recording.
→ The arrow lights, **RECORDING IN PROGRESS** is shown, high speed recording starts and the actual recording time remaining starts to count down.

- To stop recording, press ■ STOP on the unit.

Normal recording and listening

Normal recording and listening of an entire disc, a track, a program or a track edit

1 Make sure the CDR(W) is absolutely free of scratches and dust particles.

2 Follow steps 2 and 3 of "High speed recording".

3 Rotate ⏮ JOG CONTROL ⏭ to select one of the following normal record options:

If CD changer is selected:

→ CD Listen?: for listening to the entire disc during normal recording

→ TrackListen?: for listening to the track during normal recording
- Press YES to confirm.
- Rotate ⏮ JOG CONTROL ⏭ to select the desired track.
  → Rec Tr and the track number is displayed.
- Continue with step 6 of "High speed recording".

If CD changer program mode is available:

→ Prog Listen?: for listening to the program during normal recording

If CD changer track edit mode is available:

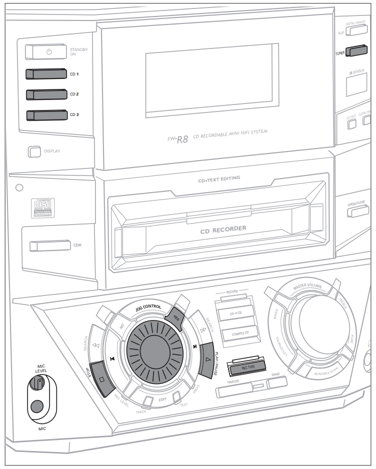
→ A-B Listen?: for listening to the A–B track during normal recording

4 Follow steps 5 and 6 of "High speed recording".

- To stop recording, press ■ STOP on the unit.

DO NOT FORGET TO FINALIZE!

Finalizing a CDR(W) disc is a simple procedure, necessary to:
- *– play a recorded CDR on a standard CD player or*
- *– play a recorded CDRW on a CDRW compatible CD player and CD recorder.*



Manual recording

Manual recording from the FM tuner

1 Make sure the CDR(W) is absolutely free of scratches and dust particles.

2 Press TUNER repeatedly to select the FM tuner. Then select the desired radio station (see "Tuning to radio stations").

3 Press REC TYPE on the unit to enter the recording menu.
→ FM Tuner? is displayed.

4 Press YES to confirm.
→ Wait and Record? are displayed.

5 Press YES to start recording.
→ The arrow lights, **RECORDING IN PROGRESS** is shown, manual recording starts and the actual recording time remaining starts to count down.

6 Press ■ STOP to stop recording.

Manual microphone recording

1 Make sure the CDR(W) is absolutely free of scratches and dust particles.

2 Set MIC LEVEL to the minimum level to prevent acoustic feedback (e.g. a loud howling sound) before you connect the microphone.

3 Connect a microphone to MIC.

4 Press CD 1, CD 2 or CD 3 to select the disc with which you wish to mix the microphone.

5 Press REC TYPE on the unit to enter the recording menu.

6 Rotate ⏮ JOG CONTROL ⏭ to select the manual recording mode for the microphone:
→ CD Mix Mic is displayed.

7 Press YES to confirm.
→ Wait and Record? are displayed.

8 Press YES to start recording.

9 Rotate ⏮ JOG CONTROL ⏭ to select the desired track.
→ The disc tray number, the current track number and playing time of the track are displayed.

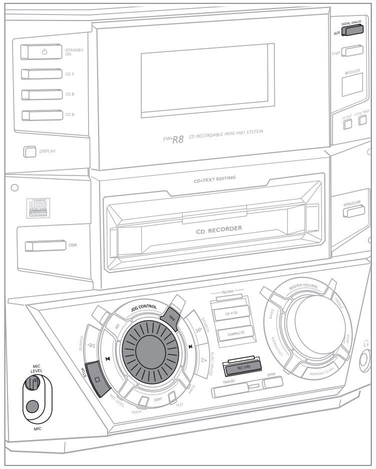
10 Press ▶ PLAY/PAUSE to start playback.
→ The selected source is mixed with the microphone.

11 Press ■ STOP to stop recording.

- To perform microphone recording only, see "Manual recording" in chapter "External recording".

DO NOT FORGET TO FINALIZE!

Finalizing a CDR(W) disc is a simple procedure, necessary to:
- *– play a recorded CDR on a standard CD player or*
- *– play a recorded CDRW on a CDRW compatible CD player and CD recorder.*



Analog or digital recording?

When making recordings from an external source, we recommend to do analog recording only if digital recording is not possible. Digital recording will usually result in better sound quality.

Recording with automatic start

Recording of an entire disc or a track with automatic start

1 Make sure the CDR(W) is absolutely free of scratches and dust particles.

2 Repeatedly press DIGITAL / ANALOG AUX to select the input for the external source from which you want to record.
→ AUX Digital is displayed if the digital input is selected.
→ AUX Analog is displayed if the analog input is selected.

3 Press REC TYPE on the unit to enter the recording menu.

4 Rotate ⏮ JOG CONTROL ⏭ to select either:
→ AUX CD?: for recording with synchronized start of an entire disc
→ AUX Track?: for recording with synchronized start of a track

5 Press YES to confirm your selection.
→ Start Source, AUX and the remaining recording time of the CDR(W) are displayed.

6 Start playback on the selected source.
→ The CD recorder starts to record simultaneously and **RECORDING IN PROGRESS** is shown. The remaining recording time on the CDR(W) is displayed.

Note: If you start playback on the selected source within a track, recording starts at the beginning of the next track or after 2.7 seconds of silence in analog recordings.

7 ***If a digital source is selected:***
After the recording process, the CD recorder stops automatically.

Note: Recordings from DAT or DCC will automatically stop after 20 seconds of silence.

If an analog source is selected:
At the end of the recording process, the CD recorder stops after a silence of 20 seconds on the source material.

- To stop recording manually, press ■ STOP on the unit.
→ **RECORDING IN PROGRESS** goes off.

DO NOT FORGET TO FINALIZE!
Finalizing a CDR(W) disc is a simple procedure, necessary to:
– play a recorded CDR on a standard CD player or
– play a recorded CDRW on a CDRW compatible CD player and CD recorder.

Manual recording

Manual recording from an external source

1 Make sure the CDR(W) is absolutely free of scratches and dust particles.

2 Repeatedly press DIGITAL / ANALOG AUX to select the input for the external source from which you want to record.
→ AUX Digital is displayed if the digital input is selected.
→ AUX Analog is displayed if the analog input is selected.

3 Press REC TYPE on the unit to enter the recording menu.

4 Rotate ⏮ JOG CONTROL ⏭ to select the type of recording.
→ AUX Manual?: for manual start of recording

5 Press YES to confirm your selection.
→ Wait is displayed.
→ Record?, AUX and the remaining recording time of the CDR(W) are displayed.

6 Start playback on the external source in order to set the optimal recording level on the CD recorder (see "REC LEVEL key").

7 Stop playback on the external source.

8 Go to the beginning of the desired track.

9 Press YES on the unit and simultaneously start playback on the external source.
→ The CD recorder starts to record and **RECORDING IN PROGRESS** is shown. The remaining recording time of the CDR(W) is displayed.

Note: If Check Input is flashing, check the digital connection.

10 Press ■ STOP on the unit to stop recording.
→ Update is displayed and **RECORDING IN PROGRESS** goes off.

Manual microphone recording

1 Make sure the CDR(W) is absolutely free of scratches and dust particles.

2 Set MIC LEVEL to the minimum level to prevent acoustic feedback (e.g. a loud howling sound) before you connect the microphone.

3 Connect a microphone to MIC.

4 Repeatedly press DIGITAL / ANALOG AUX to select the input for the external source with which you wish to mix the microphone.
→ AUX Digital is displayed if the digital input is selected.
→ AUX Analog is displayed if the analog input is selected.

5 Press REC TYPE on the unit to enter the recording menu.

6 Rotate ⏮ JOG CONTROL ⏭ to select the type of recording:
→ AUX Mix Mic: the microphone is mixed with the external source.
→ Mic Only: only the microphone is recorded.

7 Press YES to confirm your selection.
→ Wait is displayed.
→ Record?, AUX and the remaining recording time of the CDR(W) are displayed.

8 Set the optimal recording level on the CD recorder (see "REC LEVEL key").

- In addition, you can also set the optimal recording level of the microphone by turning MIC LEVEL.

9 ***If AUX Mix Mic is selected:***
Press YES on the unit and simultaneously start playback on the external source.
→ The CD recorder starts to record and **RECORDING IN PROGRESS** is shown. The remaining recording time of the CDR(W) is displayed.

If Mic Only is selected:
Press YES on the unit to start recording.
→ The CD recorder starts to record and **RECORDING IN PROGRESS** is shown. The remaining recording time of the CDR(W) is displayed.

10 Press ■ STOP on the unit to stop recording.
→ Update is displayed and **RECORDING IN PROGRESS** goes off.

DO NOT FORGET TO FINALIZE!
Finalizing a CDR(W) disc is a simple procedure, necessary to:
– play a recorded CDR on a standard CD player or
– play a recorded CDRW on a CDRW compatible CD player and CD recorder.

English

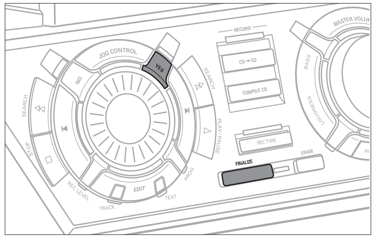
Automatic track increment

In recording mode, tracks will be incremented automatically so that the track numbers are in the same position as the original.

- To **switch** the automatic track increment function **on**, press as often as necessary TRACK INCR. on the remote control during stop when CDR is selected.
  → `Auto Tr ON` is displayed and the function is on. Track increments are now automatically detected from digital source material. In analog source material, a silence of 2.7 seconds or more is detected as a track increment.

- To **switch** the automatic track increment function **off**, press as often as necessary TRACK INCR. on the remote control during stop when CDR is selected.
  → `Auto Tr OFF` is displayed and the function is off. Track numbers can now be incremented manually by pressing TRACK INCR. on the remote control during recording. The minimum track length is 4 seconds.

Notes: – Track numbers cannot be changed after recording.
– The automatic track increment only works with consumer sources with a digital output signal according to the IEC 958 (consumer part) audio standard. DAT, DVD and DCC do not deliver this signal.



Finalizing CDR(W) discs

Finalizing a CDR(W) disc is a simple procedure, necessary to:
- – play a recorded CDR on a standard CD player,
- – play a recorded CDRW on a CDRW compatible CD player and CD recorder,
- – avoid further unwanted recordings on a disc, or
- – avoid erasure of tracks on a CDRW.

Notes: – Finalizing will take about 2–4 minutes.
– After finalization of the CDR(W), **CDR(W)** *changes to* **CD** *on the display.*
– During finalization no other operating commands can be executed.

Auto finalizing
When using either CD→CD or COMPILE CD, your recordings will be finalized automatically (see "High speed recording and automatic finalizing").

Manual finalizing when recording is in progress
1 Press FINALIZE on the unit during recording.
→ `Auto Final?` is displayed.

2 Press YES to confirm.
→ **FINALIZE** is shown. The finalization will start after recording and the actual finalizing time left will start to count down.

Manual finalizing when recording is stopped
1 Insert the CDR(W) you want to finalize in the CD recorder tray.

2 Press CDR to select the CD recorder.

3 Press FINALIZE on the unit.
→ `Finalize?` is displayed.

4 Press YES to start finalizing.
→ **FINALIZE** is shown, `Final` is displayed and the actual finalizing time left starts to count down.

Unfinalizing CDRW discs

If you want to record (or erase) on (from) a finalized CDRW, you have to unfinalize it first.

Notes: – Unfinalizing will take approximately 2 minutes.
– After unfinalizing of the CDRW, **CD** *changes to* **CDRW** *on the display.*
– When unfinalizing a CDRW with CD text on it available, this text will be transferred to the CD recorder memory. In case the memory is full, you have to erase text (see "Erasing from the memory") or to finalize another disc first in order to obtain memory space.

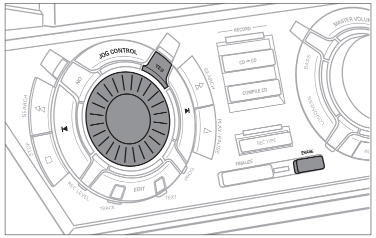
1 Insert the CDRW you want to unfinalize in the CD recorder tray.

2 Press CDR to select the CD recorder.

3 Press FINALIZE on the unit.
→ `Unfinalize?` is displayed.

4 Press YES to start unfinalizing.
→ `Unfinal` is displayed and the operation time remaining starts to count down.

Erasing from a CDRW disc



It is possible to erase one or more tracks (starting from the end of the last track) or the entire CDRW.

Erasing an entire CDRW
1 Insert the CDRW you want to erase in the CD recorder tray.

2 Press CDR to select the CD recorder.

3 Press ERASE to enter the erasing menu.

4 Rotate ⏮ JOG CONTROL ⏭ to select:
→ `Erase Disc?`: for erasing the entire disc

5 Press YES to confirm your selection.
→ `Erase?`, the total playing time and the total number of tracks to be erased are displayed. All track numbers will blink in the music calendar.

6 Press YES to start erasing.
→ `Erase` is displayed and the operation time remaining starts to count down. The track number of the actual erased track will go off in the music calendar.

Erasing one or more tracks
1 Insert the CDRW from which you want to erase tracks in the CD recorder tray.

2 Press CDR to select the CD recorder.

3 Press ERASE to enter the erasing menu.

4 Rotate ⏮ JOG CONTROL ⏭ to select the track number(s) you wish to erase.
→ `Erase` and the track number (e.g. `10+)?` are displayed.

- To select more tracks to be erased, repeat step 4.

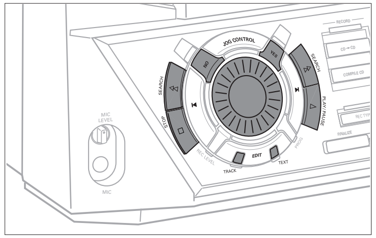
Note: When erasing more tracks, the tracks to be erased must be selected in sequence, starting from the last recorded track. Example: The CDRW has 5 tracks recorded on it. Now, you can erase tracks 5 and 4. You can also erase tracks 5, 4 and 3, but you cannot erase tracks 5 and 3!

→ All track numbers selected for erasing will blink in the music calendar. The remaining track numbers light up.

5 Press YES to confirm your selection.
→ `Erase?` is displayed.

6 Press YES to start erasing.
→ `Erase` is displayed and the operation time remaining starts to count down. The track number of the currently erased track will go off in the music calendar.

English



EDIT TEXT (on CD recorder only)

Storing text during stop mode

After you have recorded your CDR(W) you can enter text, e.g. names to discs and tracks. The text will be displayed during playback. You can enter up to 60 characters per text field. Only use an unfinalized CDR or CDRW (finalized CDRW must be unfinalized first).

1 If necessary, press ■ STOP on the unit (■ on the remote control) to stop playback.

2 Press CDR to select the CD recorder.

3 Press EDIT TEXT on the unit to enter the text edit menu.
→ **CD TEXT EDIT** is blinking, Text Edit is displayed.

4 Press YES to confirm.

5 Rotate ⏮ JOG CONTROL ⏭ to select either:
→ Album Artist: for editing the CD artist.
→ Album Title: for editing the CD title.
→ Artist Tr 1 or (2, 3,…): for editing the artist of track 1 or (2, 3,…).
→ Title Tr 1 or (2, 3,…): for editing the title of track 1 or (2, 3,…).

6 Press YES to confirm the selection.

7 Rotate ⏮ JOG CONTROL ⏭ (press the alphabet keys on the remote control) to select a character.

8 Press YES to confirm the selection.
→ The cursor moves to the next character space.

9 Repeat steps 7 and 8 for adding further characters.

10 Press EDIT TEXT to save the characters that have been selected and to exit to the last position in the text editing menu.
→ Update is displayed.

Storing text during recording

You can store and edit text even while recording a single track or single CD, or when recording from an external source or tuner. Editing text during finalizing is not possible. Make sure, when using high speed recording and automatic finalizing, to enter the text before finalizing starts, otherwise automatic finalizing will be cancelled.

- Follow steps 3–10 of “Storing text during stop mode”.

Note: Editing text is not possible when a copy protected track is analog recorded. Editing is stopped, CDText Saved *is displayed and your text is saved for later editing.*

Auto copied text

When an artist’s name has been stored for a track, it will be copied automatically into the next track.

- Press either:
  EDIT TEXT to confirm the copied text,
  or
  NO to delete the copied text and enter new text.

Inserting a space

1 Press ◀◀ SEARCH or ▶▶ SEARCH (◀◀ or ▶▶ on the remote control) to move to the position where the space is to be inserted.
→ The position starts blinking.

2 Press YES to confirm the position of the insert character.
→ A space will be inserted, text will move to the right.

Deleting and substituting a character

1 Press ◀◀ SEARCH or ▶▶ SEARCH (◀◀ or ▶▶ on the remote control) to move to the character’s position to be deleted or substituted.
→ The character starts blinking.

2 ***If you want to delete the character:***
Press NO.
→ The character is deleted and the text is shifted one position to the left.

If you want to substitute the character:
Rotate ⏮ JOG CONTROL ⏭ (press the alphabet keys on the remote control) to select a new character.

Press YES to confirm the selection.

- To change another character, press ◀◀ SEARCH or ▶▶ SEARCH (◀◀ or ▶▶ on the remote control).

Erasing text

1 Press EDIT TEXT to enter the text edit menu.
→ **CD TEXT EDIT** is blinking, Text Edit is displayed.

2 Rotate ⏮ JOG CONTROL ⏭ to select the text erase menu.
→ Text Erase is displayed.

3 Press YES to confirm.

4 Rotate ⏮ JOG CONTROL ⏭ to select one of the following:
→ All Text: All text of the selected disc is chosen to be erased in one step.
→ Album Artist: CD artist’s name is chosen to be erased.
→ Album Title: CD title is chosen to be erased.
→ Artist Tr 1 or (2, 3,…): artist’s name of track 1 or (2, 3,…) is chosen to be erased.
→ Title Tr 1 or (2, 3,…): title of track 1 or (2, 3,…) is chosen to be erased.

5 Press YES to confirm your selection.
→ Erase? or Erase All? is displayed.

6 Press YES to start erasing.
→ Update is displayed and the chosen text is erased.

Erasing from the memory

When the text memory of your CD recorder is full, the messages Memory Full and Finalize Disc will be displayed. If you still want to add a new disc to the text memory, you either have to erase another disc from the memory or you have to finalize another disc.

1 Press EDIT TEXT to enter the text edit menu.
→ **CD TEXT EDIT** is blinking, Text Edit is displayed.

2 Rotate ⏮ JOG CONTROL ⏭ to select the memory view menu.
→ Text Memory is displayed.

3 Press YES to confirm.

4 Rotate ⏮ JOG CONTROL ⏭ to select the disc you wish to erase from the text memory.

5 Press YES to confirm.
→ Erase Memory is displayed.

6 Press YES to confirm the text erasure of that particular disc.

Note: If there are no discs stored in the text memory, Memory Empty *will be displayed.*

Track editing (on CD changer only)

You can create a “track” by marking a passage of music within one track on the current disc. This new “track” can be used for recording or playing. The minimum track length is 4 seconds.

1 Press EDIT TRACK on the unit.
→ **EDIT TRACK** starts blinking, Track and the current track number ? are displayed. The current track number also blinks in the music calendar.

2 Rotate ⏮ JOG CONTROL ⏭ until the desired track number is displayed.

3 Press YES to confirm the selected track.
→ The marker position A and the track time will be displayed. The first 4 seconds of the track will be played continuously.

4 Press ▶ PLAY/PAUSE on the unit to play to the desired start position of your new “track” (The initial position of marker A is always the start of the chosen track).

- To fast forward to the desired start position, press ◀◀ SEARCH or ▶▶ SEARCH on the unit.

- To fine tune the position, first press ▶ PLAY/PAUSE on the unit, then rotate ⏮ JOG CONTROL ⏭.

5 Press YES to confirm the position of marker A.
→ The marker position B and the new “track” time will be displayed. The first 4 seconds before marker position B **until marker position** B will be played continuously.

6 Press ▶ PLAY/PAUSE on the unit to play to the stop position of your new “track” (the initial position of marker B is always the position of marker A plus 4 seconds).

7 Press YES to confirm the marked passage.
→ **EDIT TRACK** is shown, A–B and the track edit time are displayed.

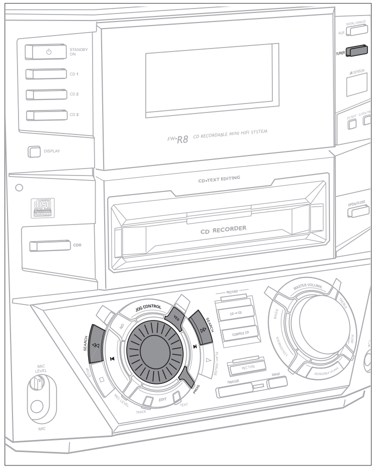
Note: If you open the CD changer tray, the edit is deleted.

Clearing the track edit

1 Press NO during stop.
→ Clear A–B? is displayed.

2 Press YES to clear the markers.
→ The markers A–B are cleared.

TUNER



Tuning to radio stations

1 Press TUNER to select the tuner.
→ `Tuner` is scrolled.

2 Press TUNER again to select the desired waveband.
→ The selected waveband is displayed.

3 Keep ◀◀ SEARCH or ▶▶ SEARCH (◀◀ or ▶▶ on the remote control) pressed for more than a half second.
→ The selected waveband and `Searching` are displayed. The radio tunes to a station with sufficient signal strength.

4 Repeat searching until you find the desired station.

- To tune to a weak station, briefly press ◀◀ SEARCH or ▶▶ SEARCH (◀◀ or ▶▶ on the remote control) as often as necessary for optimum reception.

Storing radio stations

It is possible to store up to 40 radio stations. Stations can be selected and programmed automatically or you can do that yourself. Programming will overwrite your former presets starting from the last active preset station. After programming the last stored preset station will be tuned.

Automatic programming
If no preset is tuned, automatic programming starts at preset number one.

1 Follow steps 1 and 2 of "Tuning to radio stations".

2 Keep PROG (PROGRAM on the remote control) pressed for more than 2 seconds.
→ `Autoprogram` is displayed, **PROG** and the current preset number in the music calendar start blinking.
→ All available radio stations for the selected waveband are stored automatically. **PROG** goes off, the preset number, the waveband and the frequency of the last preset station are displayed briefly.

- To store radio stations for another waveband, repeat steps 1–2. Make sure to select the next available preset number first before proceeding, otherwise already programmed radio stations may be erased.

- To exit the automatic programming, press PROG (PROGRAM on the remote control).

Note: Strong stations will always automatically be programmed first, followed by the weak stations.

Manual programming
1 Follow steps 1 and 2 of "Tuning to radio stations".

2 Keep PROG (PROGRAM on the remote control) pressed for less than 2 seconds.
→ **PROG** and the current preset number in the music calendar start flashing.

3 Press ◀◀ SEARCH or ▶▶ SEARCH (◀◀ or ▶▶ on the remote control) to tune to the desired radio station.

- To allocate the radio station to another preset number, rotate |◀ JOG CONTROL ▶| (press |◀ or ▶| on the remote control).

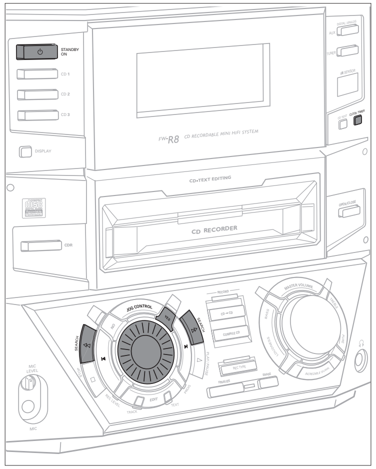
4 Press YES to confirm the setting.
→ **PROG** goes off, the preset number, the waveband and the frequency of the preset station are displayed.

- To exit manual programming, press PROG (PROGRAM on the remote control).

Tuning to preset stations

- Use |◀ JOG CONTROL ▶| (|◀ or ▶| on the remote control) until the preset number of the desired station is displayed.

CLOCK/TIMER



Clock setting

Manual clock setting
1 Press ⏻ STANDBY ON as often as necessary on the unit to switch the unit to standby.

2 Press CLOCK/TIMER on the unit.

3 Rotate |◀ JOG CONTROL ▶| to select the clock.
→ `Clock` is displayed and 🕘 starts blinking.

4 Press YES to confirm the selection.
→ The day of the week digit blinks.

5 Rotate |◀ JOG CONTROL ▶| to set the day.

6 Use ◀◀ SEARCH or ▶▶ SEARCH on the unit to move from day of the week to hour.

7 Rotate |◀ JOG CONTROL ▶| to set the hour.

8 Repeat steps 6 and 7 to set the minutes.

9 Press YES to confirm the settings.

CLOCK/TIMER

You can select different timer functions which will be activated at a chosen time. Make sure the clock is set before using one of these features.

Alarm timer

Alarm timer setting
The unit can be used as an alarm clock, whereby the tuner, CD recorder or CD changer starts playback automatically at a preset time.

1 Press ⏻ STANDBY ON as often as necessary on the unit to switch the unit to standby.

2 Press CLOCK/TIMER on the unit.

3 Rotate ⏮ JOG CONTROL ⏭ to select the alarm timer.
→ Alarm is displayed, **ALARM** is blinking.

4 Press YES to confirm the selection.
→ The hour digit is blinking.

5 Rotate ⏮ JOG CONTROL ⏭ to set the hour.

6 Use ◀◀ SEARCH or ▶▶ SEARCH on the unit to move from hour to minutes.

7 Rotate ⏮ JOG CONTROL ⏭ to set the minutes.

8 Press YES to confirm the time settings.

9 Rotate ⏮ JOG CONTROL ⏭ to select the source you want to be woken up with.

10 Press YES on the unit to confirm the source selection.

- To stop the alarm, press ⏻ STANDBY ON on the unit.

Record timer

Record timer setting
The unit can do recordings automatically from an external source or from a preset radio station at a preset time.

1 Follow steps 1 and 2 of “Alarm timer setting”.

2 Rotate ⏮ JOG CONTROL ⏭ to select the record timer.
→ Rec Timer is displayed, **REC** is shown and ⏲ starts blinking.

3 Press YES on the unit to confirm the selection.
→ The hour digit for the start of recording blinks.

4 Rotate ⏮ JOG CONTROL ⏭ to set the hour of start of recording.

5 Use ◀◀ SEARCH or ▶▶ SEARCH on the unit to move from hour to minutes of start of recording.

6 Rotate ⏮ JOG CONTROL ⏭ to set the minutes of start of recording.

7 Continue this procedure by using ◀◀ SEARCH or ▶▶ SEARCH to move on to hour and minutes of end of recording and to the day of the week. After each move, always rotate ⏮ JOG CONTROL ⏭ to do the settings.

8 Press YES to confirm the settings.

9 Rotate ⏮ JOG CONTROL ⏭ to select from which you want to record.
If you have chosen the tuner as source:
Rotate ⏮ JOG CONTROL ⏭ again to select a preset radio station and confirm this selected station by pressing YES.

10 Press YES on the unit to confirm the source selection.

- To stop the recording press ■ STOP on the unit.

Switching the alarm and record timer on/off

- Press TIMER ON/OFF on the remote control repeatedly to switch the alarm and/or record timer on or off:
  → **ALARM** is shown and Alarm ON is displayed when the alarm timer is on.
  → **REC** is shown and REC Timer ON is displayed when the record timer is on.
  → **ALARM** and **REC** are shown, REC+Alarm ON is displayed when the alarm and record timer are on.
  → **ALARM** and **REC** go off, REC+AlarmOFF is displayed when the alarm and record timer are off.

Sleep timer

You can set a certain period of time before the unit switches off.

1 Press SLEEP on the remote control until the desired sleeper time is displayed.
→ **SLEEP** is shown and Sleep 60 min, 45 min, 30 min,15 min is displayed or, Sleep OFF is displayed.

2 As soon as the desired time is displayed, do not press SLEEP again.
→ After the chosen time has elapsed, the unit switches to standby.

- To deactivate the sleep timer, press SLEEP on the remote control until Sleep OFF is displayed.

TECHNICAL DATA

Subject to modification without notice.

General

AC Power	120 V / 60 Hz
Power consumption	
Active	148 W
Standby	< 30 W
Economy power save mode	< 2 W
Dimensions, w × h × d	10.4 × 12.2 × 15.6 in.
Weight (without speakers)	11 kg

Amplifier

Output power	2 × 100 W FTC, 6 Ω, 1 kHz, THD 10%
Frequency response	60–12,500 Hz FTC, +0.5/-1.5 dB
S/N ratio	≥ 80 dBA (IEC)
Input sensitivity	
AUX IN L/R	800 mV
MIC	1 mV
DIGITAL IN	500 mV_{pp} (75 Ω)/12–56 kHz
Output	
Impedance speakers	≥ 6 Ω
Impedance headphones	32 Ω–600 Ω
LINE OUT L/R	500 mV
DIGITAL OUT	500 mV_{pp} (75 Ω)/44.1 kHz
SUBWOOFER OUT	1 V

CD changer

Number of programmable tracks	40
Frequency range	20–20,000 Hz
S/N ratio	≥ 92 dBA
Cross talk	≤ -65 dB (1 kHz)
Total harmonic distortion	≤ -94 dB (1 kHz)

CD recorder

Number of programmable tracks	99
CD playback	
Frequency range	20–20,000 Hz
S/N ratio playback	≥ 92 dBA
Cross talk	≤ -65 dB (1 kHz)
Total harmonic distortion	≤ -84 dB (1 kHz)
Analog recording, digital playback	
Frequency range	20–20,000 Hz
S/N ratio playback	≥ 86 dBA
Cross talk	≤ -65 dB (1 kHz)
Total harmonic distortion	≤ -81 dB (1 kHz)

Laser (CD recorder)

Type	Semiconductor laser GaAIAs
Wave length	775–795 nm (at 25° C)
Output power	2.5 mW (Read), 35 mW (Write)
Beam divergence	60 degree

Tuner

Wave range	
FM	87.5–108.0 MHz
AM	530–1,700 kHz

Speakers

System	3 way bass reflex
Impedance	6 Ω
Woofer	1 × 6.5"
Tweeter	1 × 2.5", Ferro fluid cooled
Tweeter	1 × 1", Polydome
Dimensions, h × w × d	12.2 × 9.4 × 12.7 in.
Weight	4.6 kg/each

TROUBLESHOOTING

WARNING

Under no circumstances should you try to repair the unit yourself as this will invalidate the guarantee. Do not open the unit as there is a risk of electric shock.

If a fault occurs, first check the points listed, before taking the unit for repair.

If you are unable to solve a problem by following these hints, consult your dealer or service center.

LASER SAFETY

This unit employs a laser. Only a qualified service person should remove the cover or attempt to service this device, due to possible eye injury.

PROBLEM	POSSIBLE CAUSE	SOLUTION
No sound, no power	Volume is not correctly adjusted.	Adjust the volume.
	Headphones are connected.	Disconnect headphones.
	Speakers are wrongly or not connected.	Make sure speakers are properly connected.
	Power cable is not securely connected.	Connect power cable properly.
No reaction to controls	Electrostatic discharge	Disconnect the unit from power supply, then reconnect after a few seconds.
Poor radio reception	Weak radio signal	Direct the antenna for optimum reception.
	Antenna is positioned near a radiation source such as a TV, VCR, computer, etc.	Change the position of the interfering unit or try to switch it off.
Poor bass sound	Speakers are not in phase.	Connect the colored (or marked) wires to the colored terminals and the black (or unmarked) wires to the black terminals.
Bad sound	Badly matched setting for the given type of music or sound.	Correct the sound settings on the unit.
Remote control does not function properly	Batteries are inserted incorrectly.	Insert batteries correctly.
	Batteries are flat.	Insert new batteries.
	Distance to the unit is too large.	Reduce distance.
Insert Disc **indication**	The CD(RW) is scratched badly or dirty.	Replace or clean the disc.
	No CD(RW) inserted or inserted upside down.	Insert a CD(RW), with label facing upwards.
	The laser lens is steamed up.	Wait until the lens has cleared.
Wrong Disc **indication,** Use Audio CD **indication**	No digital audio disc is inserted.	Insert a digital audio disc marked with “Digital Audio” and the special logo.
Disc Recover **indication**	Power loss	Wait a few minutes. The disc is being repaired.
Disc Error **indication**	Disc Recover was not able to repair the disc.	The disc can still be played, but not recorded or finalized further.
Check Input **indication**	Wrong input is chosen.	Select the correct input.
	No correct digital source is detected after starting recording.	Make sure the connection cable is properly connected.
Does not record	CDR(W) is scratched or dirty.	Make sure the CDR(W) is absolutely free of scratches and dust particles.
	The inserted disc is not recordable.	Insert a digital CDR(W) and make sure it is unfinalized.
	Recording process is interrupted (power loss, mechanical shock).	Start recording again.
Recorded disc does not play in another standard CD player	The inserted CDR(W) is not finalized.	Finalize the CDR(W).
	The CDRW is inserted in a non-CDRW compatible CD player.	Insert the CDRW in a CDRW compatible CD player.

Warnings & Safety

ESD

(GB) WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

(F) ATTENTION

Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(NL) WAARSCHUWING

Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB) AVAILABLE ESD PROTECTION EQUIPMENT :

anti-static table mat	large 1200x650x1.25mm	4822 466 10953
	small 600x650x1.25mm	4822 466 10958
anti-static wristband		4822 395 10223
connection box	(3 press stud connections, 1MΩ)	4822 320 11307
extendible cable	(2m, 2MΩ, to connect wristband to connection box)	4822 320 11305
connecting cable	(3m, 2MΩ, to connect table mat to connection box)	4822 320 11306
earth cable	(1MΩ, to connect any product to mat or to connection box)	4822 320 11308
KIT ESD3	(combining all 6 prior products - small table mat)	4822 310 10671
wristband tester		4822 344 13999

SAFETY

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

(F)

Les normes de sécurité exigent que l`appareil soit remis à l`état d`origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkeliijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

(I)

Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

(GB) **DANGER**: Invisible laser radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.

CLASS 1
LASER PRODUCT

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(DK) Advarsel !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

(FIN) Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

(GB)

After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

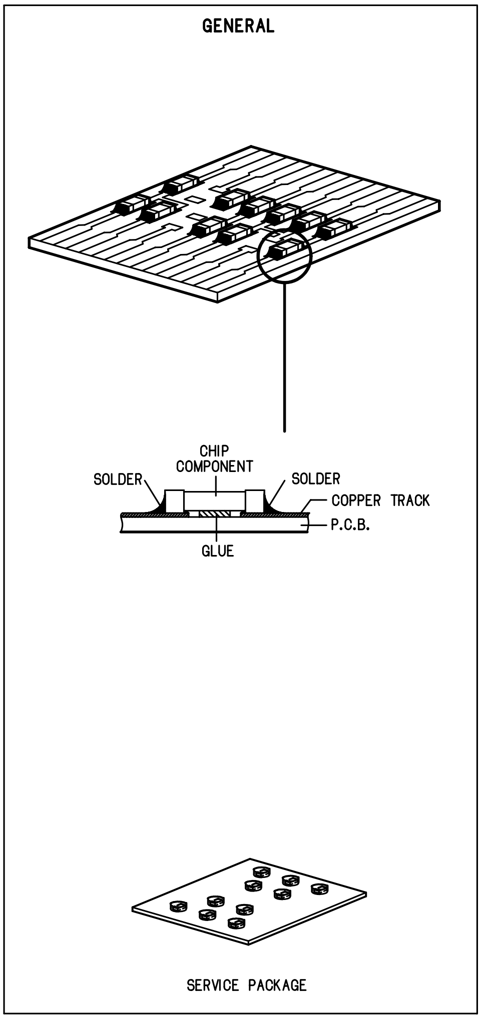
(F)

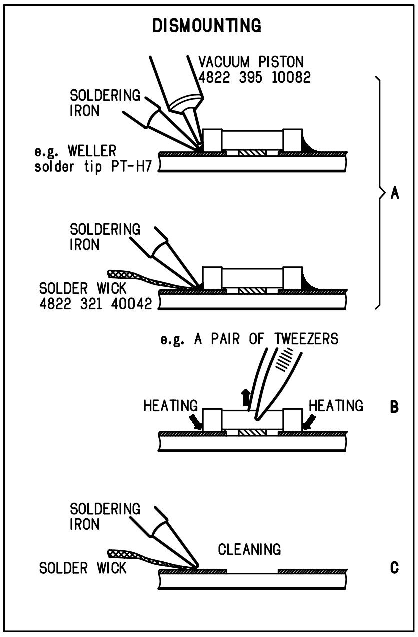
"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

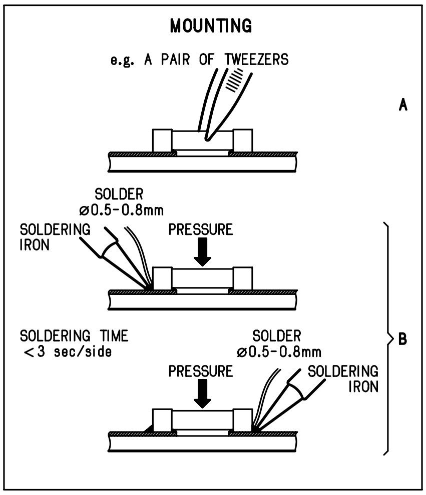
Service Tools

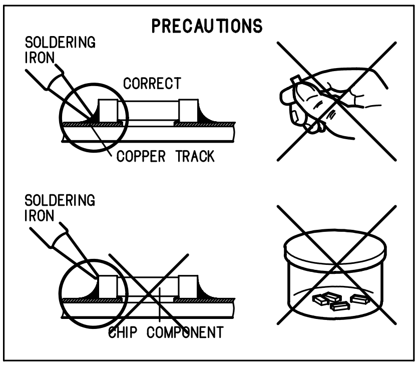
TORX T10 screwdriver with shaftlength 150mm	4822 395 50423
TORX screwdriver set SBC 163	4822 295 50145
Audio signal disc SBC 429	4822 397 30184
Playability test disc SBC444	4822 397 30245
Test disc 5 (disc without errors) + **Test disc 5A** (disc with dropout errors, black spots and fingerprints) SBC 426/426A	4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30dB level without "pause")	4822 397 30155

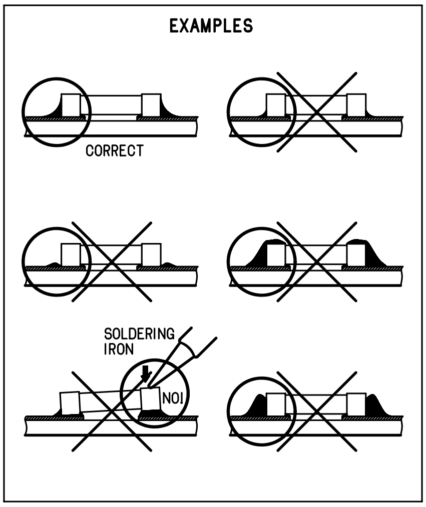
Handling Chip Components


GENERAL
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE


DISMOUNTING
VACUUM PISTON 4822 395 10082
SOLDERING IRON
e.g. WELLER solder tip PT-H7
A
SOLDERING IRON
SOLDER WICK 4822 321 40042
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
CLEANING
SOLDER WICK
C

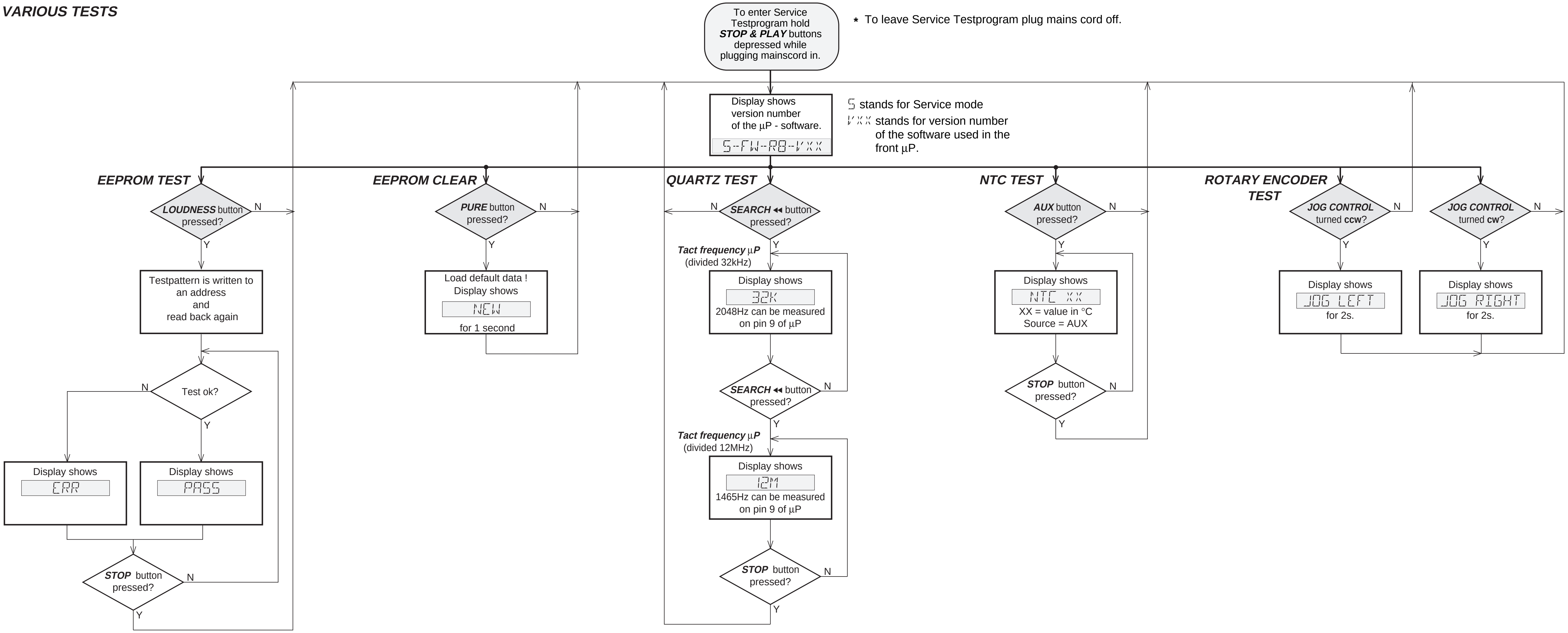

MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER ø0.5-0.8mm
SOLDERING IRON
PRESSURE
SOLDERING TIME <3 sec/side
SOLDER ø0.5-0.8mm
PRESSURE
SOLDERING IRON
B


PRECAUTIONS
SOLDERING IRON
CORRECT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT

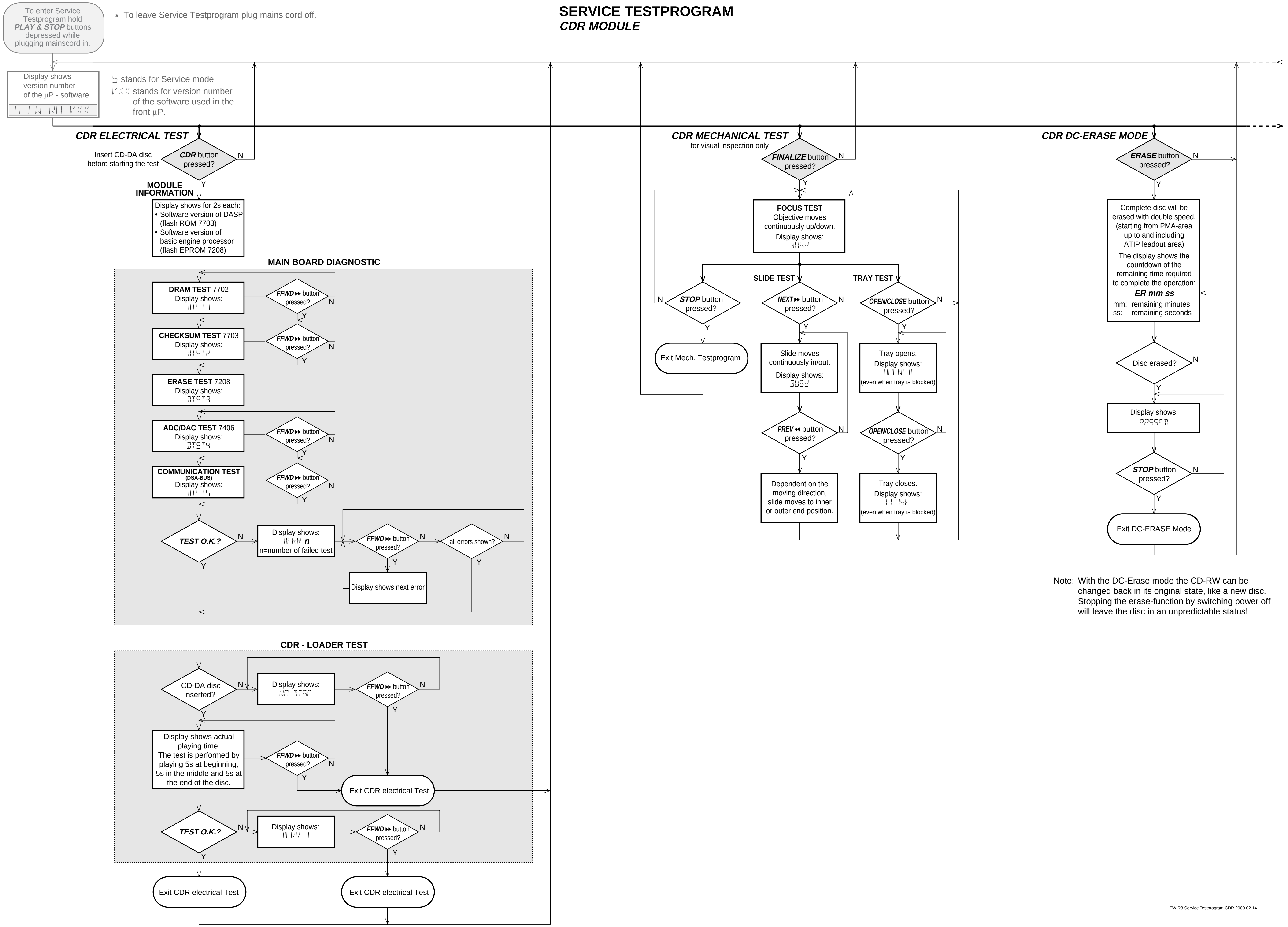

EXAMPLES
CORRECT
SOLDERING IRON
NO!

SERVICE TESTPROGRAM

VARIOUS TESTS

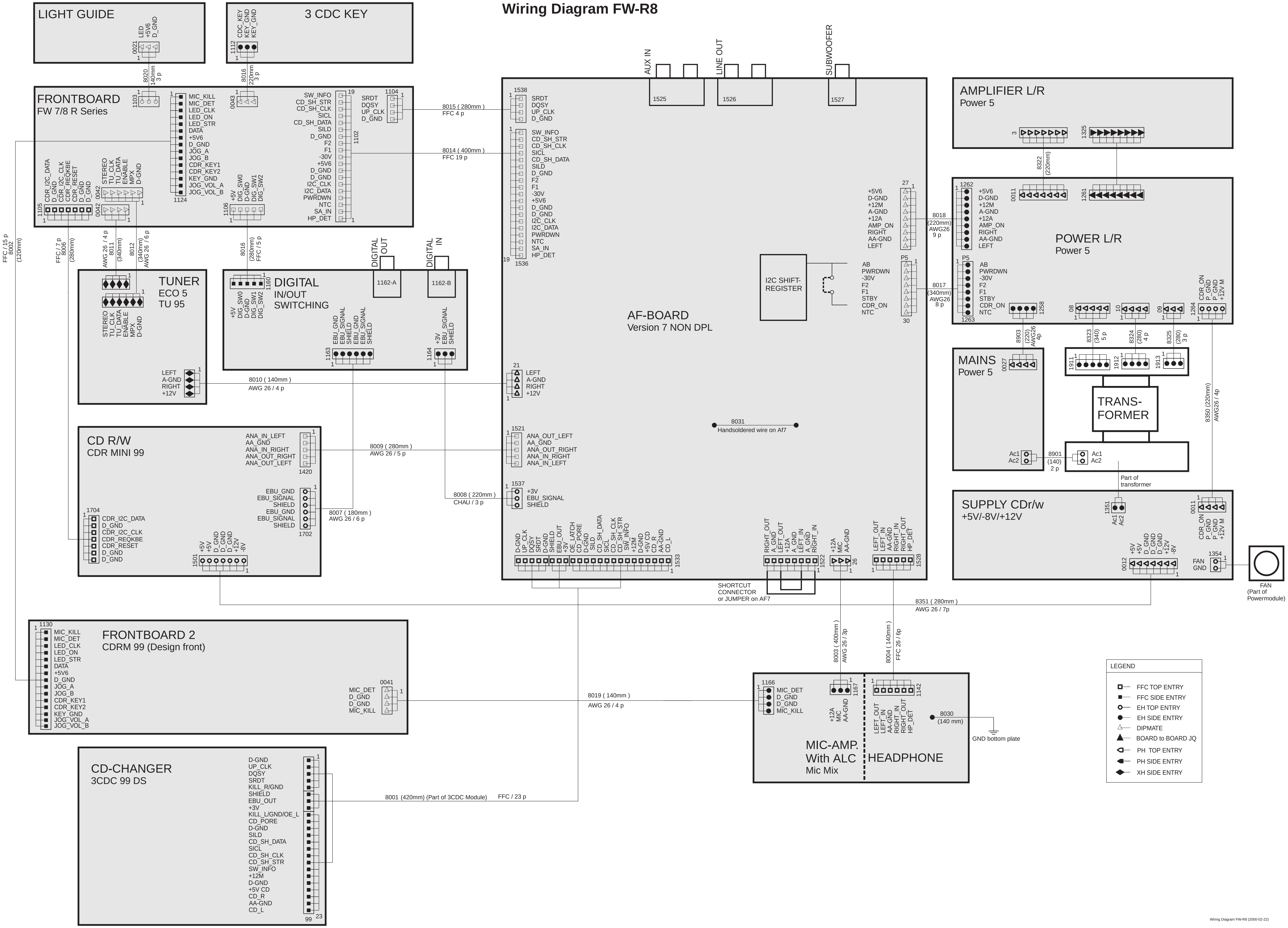

To enter Service Testprogram hold **STOP & PLAY** buttons depressed while plugging mainscord in.
* To leave Service Testprogram plug mains cord off.
Display shows version number of the µP - software.
5-FW-R8-VXX
5 stands for Service mode
VXX stands for version number of the software used in the front µP.
EEPROM TEST
LOUDNESS button pressed?
N
Y
Testpattern is written to an address and read back again
Test ok?
N
Y
Display shows
ERR
Display shows
PASS
STOP button pressed?
N
Y
EEPROM CLEAR
PURE button pressed?
N
Y
Load default data ! Display shows
NEW
for 1 second
QUARTZ TEST
SEARCH ◂◂ button pressed?
N
Y
Tact frequency µP (divided 32kHz)
Display shows
32K
2048Hz can be measured on pin 9 of µP
SEARCH ◂◂ button pressed?
N
Y
Tact frequency µP (divided 12MHz)
Display shows
12M
1465Hz can be measured on pin 9 of µP
STOP button pressed?
N
Y
NTC TEST
AUX button pressed?
N
Y
Display shows
NTC XX
XX = value in °C
Source = AUX
STOP button pressed?
N
Y
ROTARY ENCODER TEST
JOG CONTROL turned ccw?
N
Y
Display shows
JOG LEFT
for 2s.
JOG CONTROL turned cw?
N
Y
Display shows
JOG RIGHT
for 2s.

SERVICE TESTPROGRAM
CDR MODULE


To enter Service Testprogram hold PLAY & STOP buttons depressed while plugging mainscord in.
* To leave Service Testprogram plug mains cord off.
Display shows version number of the µP - software.
S-FW-R8-Vxx
S stands for Service mode
Vxx stands for version number of the software used in the front µP.
CDR ELECTRICAL TEST
Insert CD-DA disc before starting the test
CDR button pressed?
N
Y
MODULE INFORMATION
Display shows for 2s each:
• Software version of DASP (flash ROM 7703)
• Software version of basic engine processor (flash EPROM 7208)
MAIN BOARD DIAGNOSTIC
DRAM TEST 7702
Display shows:
DTST 1
FFWD ▸▸ button pressed?
CHECKSUM TEST 7703
Display shows:
DTST2
ERASE TEST 7208
Display shows:
DTST3
ADC/DAC TEST 7406
Display shows:
DTST4
COMMUNICATION TEST (DSA-BUS)
Display shows:
DTST5
TEST O.K.?
Display shows:
DERR n
n=number of failed test
all errors shown?
Display shows next error
CDR - LOADER TEST
CD-DA disc inserted?
Display shows:
NO DISC
Display shows actual playing time.
The test is performed by playing 5s at beginning, 5s in the middle and 5s at the end of the disc.
Exit CDR electrical Test
Display shows:
DERR 1
Exit CDR electrical Test
Exit CDR electrical Test
CDR MECHANICAL TEST
for visual inspection only
FINALIZE button pressed?
FOCUS TEST
Objective moves continuously up/down.
Display shows:
BUSY
SLIDE TEST
TRAY TEST
STOP button pressed?
NEXT ▸▸ button pressed?
OPEN/CLOSE button pressed?
Exit Mech. Testprogram
Slide moves continuously in/out.
Display shows:
BUSY
Tray opens.
Display shows:
OPENED
(even when tray is blocked)
PREV ◂◂ button pressed?
OPEN/CLOSE button pressed?
Dependent on the moving direction, slide moves to inner or outer end position.
Tray closes.
Display shows:
CLOSE
(even when tray is blocked)
CDR DC-ERASE MODE
ERASE button pressed?
Complete disc will be erased with double speed. (starting from PMA-area up to and including ATIP leadout area)
The display shows the countdown of the remaining time required to complete the operation:
ER mm ss
mm: remaining minutes
ss: remaining seconds
Disc erased?
Display shows:
PASSED
STOP button pressed?
Exit DC-ERASE Mode
N
Y

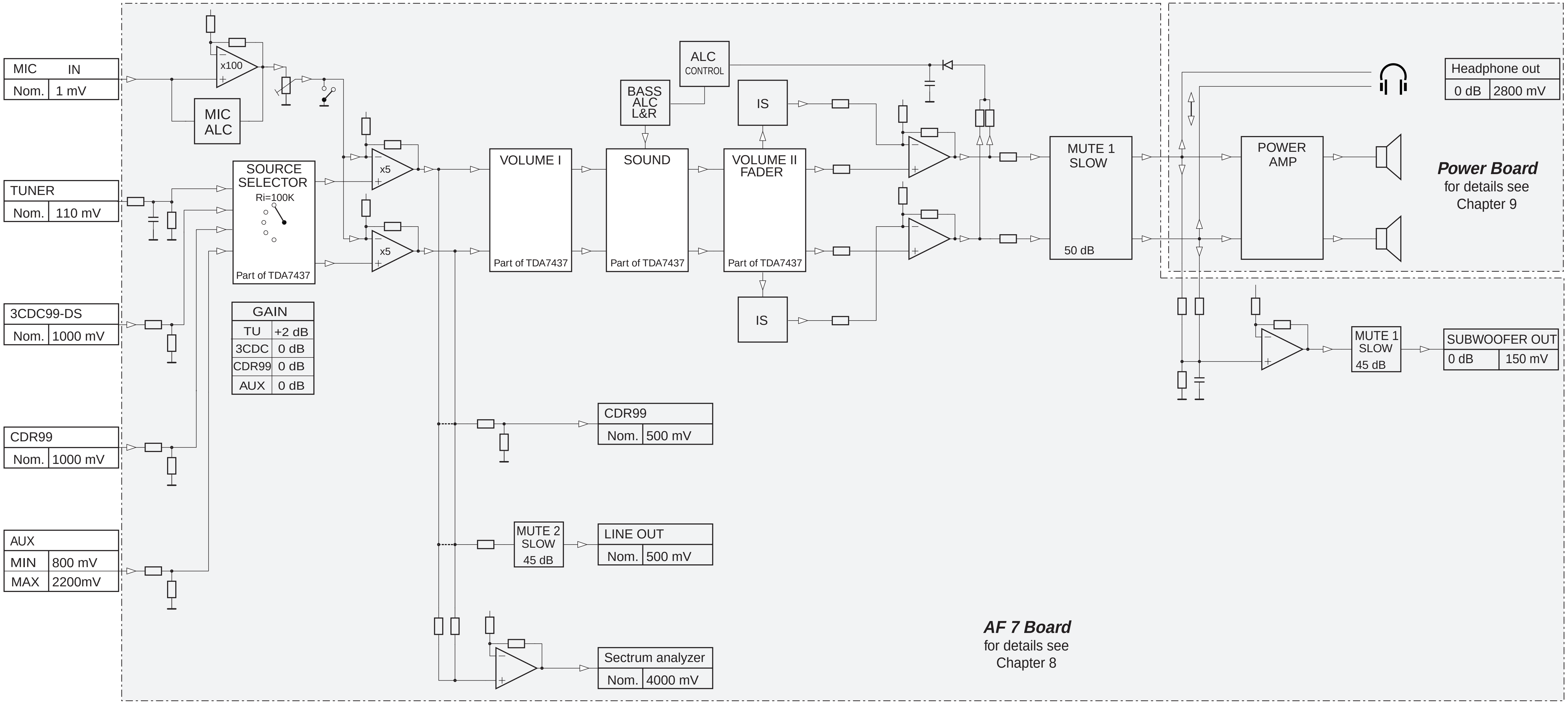
Note: With the DC-Erase mode the CD-RW can be changed back in its original state, like a new disc. Stopping the erase-function by switching power off will leave the disc in an unpredictable status!

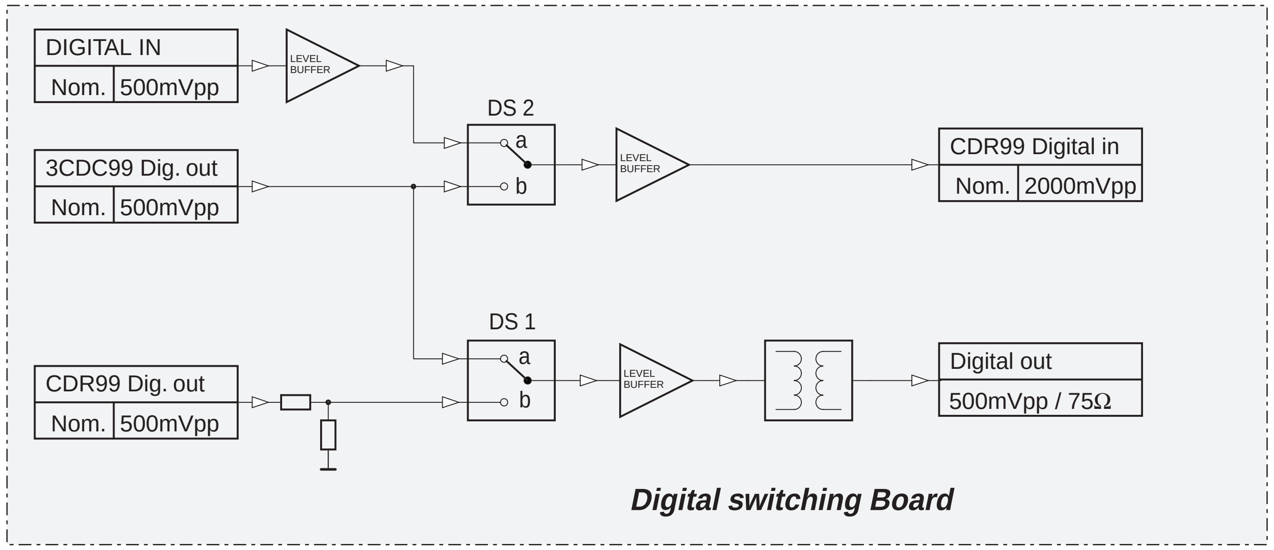
Wiring Diagram FW-R8

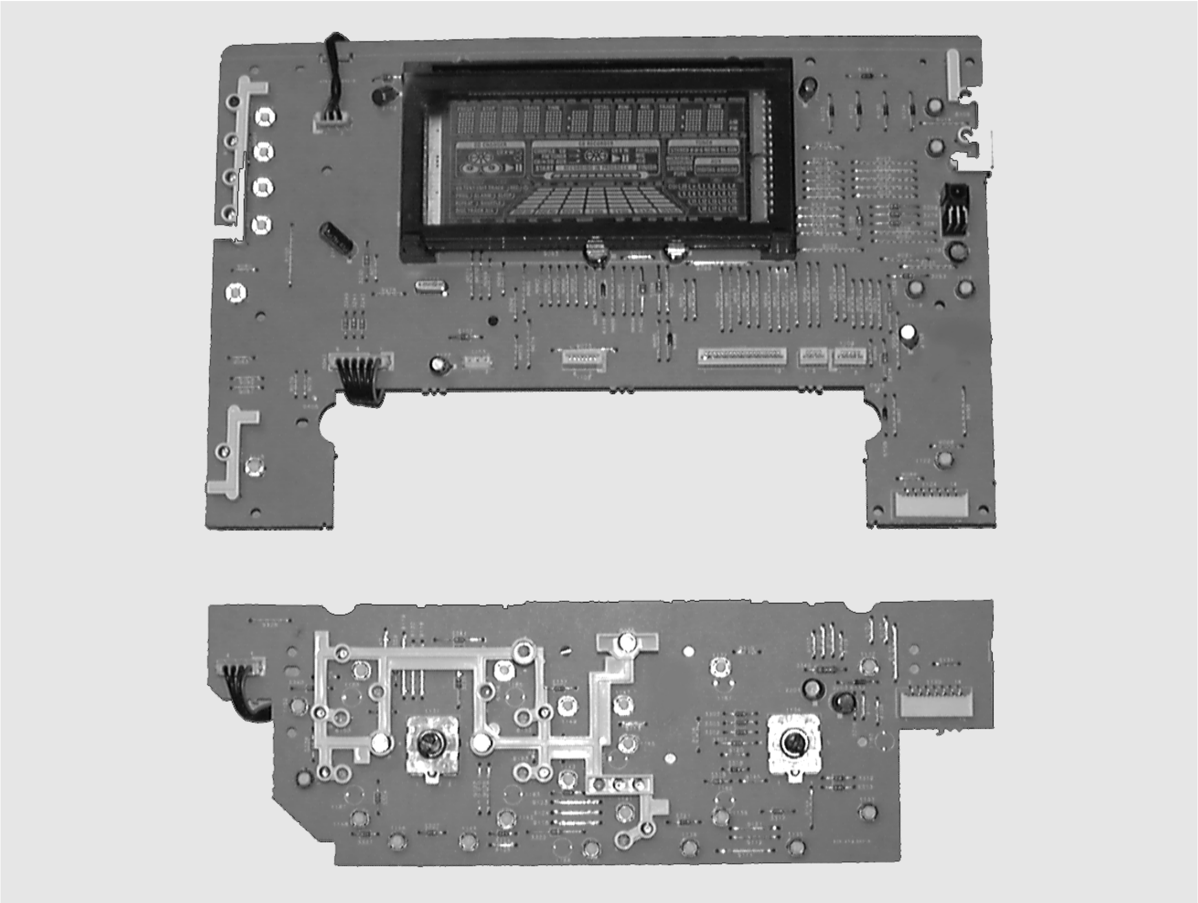

LIGHT GUIDE
0021
LED
+5V6
D_GND
8020
140mm
3 p
3 CDC KEY
1112
CDC_KEY
KEY_GND
KEY_GND
8016
220mm
3 p
FRONTBOARD
FW 7/8 R Series
1103
1124
MIC_KILL
MIC_DET
LED_CLK
LED_ON
LED_STR
DATA
+5V6
D_GND
JOG_A
JOG_B
CDR_KEY1
CDR_KEY2
KEY_GND
JOG_VOL_A
JOG_VOL_B
0043
1102
SW_INFO
CD_SH_STR
CD_SH_CLK
SICL
CD_SH_DATA
SILD
D_GND
F2
F1
-30V
+5V6
D_GND
D_GND
I2C_CLK
I2C_DATA
PWRDWN
NTC
SA_IN
HP_DET
1104
SRDT
DQSY
UP_CLK
D_GND
1105
CDR_I2C_DATA
D_GND
CDR_I2C_CLK
CDR_REQKBE
CDR_RESET
D_GND
D_GND
0042
STEREO
TU_CLK
TU_DATA
ENABLE
MPX
D-GND
1106
+5V
DIG_SW0
D-GND
DIG_SW1
DIG_SW2
8015 (280mm)
FFC 4 p
8014 (400mm)
FFC 19 p
FFC / 15 p
8002
(120mm)
FFC / 7 p
8006
(280mm)
AWG 26 / 4 p
8011
(340mm)
8012
(340mm)
AWG 26 / 6 p
8016
(280mm)
FFC / 5 p
TUNER
ECO 5
TU 95
STEREO
TU_CLK
TU_DATA
ENABLE
MPX
D-GND
LEFT
A-GND
RIGHT
+12V
DIGITAL
IN/OUT
SWITCHING
1160
+5V
DIG_SW0
D-GND
DIG_SW1
DIG_SW2
DIGITAL OUT
DIGITAL IN
1162-A
1162-B
1163
EBU_GND
EBU_SIGNAL
SHIELD
EBU_GND
EBU_SIGNAL
SHIELD
1164
+3V
EBU_SIGNAL
SHIELD
8010 (140mm)
AWG 26 / 4 p
CD R/W
CDR MINI 99
1420
ANA_IN_LEFT
AA_GND
ANA_IN_RIGHT
ANA_OUT_RIGHT
ANA_OUT_LEFT
8009 (280mm)
AWG 26 / 5 p
1702
EBU_GND
EBU_SIGNAL
SHIELD
EBU_GND
EBU_SIGNAL
SHIELD
8007 (180mm)
AWG 26 / 6 p
1704
CDR_I2C_DATA
D_GND
CDR_I2C_CLK
CDR_REQKBE
CDR_RESET
D_GND
D_GND
1501
+5V
+5V
D_GND
D_GND
D_GND
+12V
-8V
8008 (220mm)
CHAU / 3 p
AUX IN
LINE OUT
SUBWOOFER
1525
1526
1527
AF-BOARD
Version 7 NON DPL
1538
SRDT
DQSY
UP_CLK
D_GND
1536
SW_INFO
CD_SH_STR
CD_SH_CLK
SICL
CD_SH_DATA
SILD
D_GND
F2
F1
-30V
+5V6
D_GND
D_GND
I2C_CLK
I2C_DATA
PWRDWN
NTC
SA_IN
HP_DET
21
LEFT
A-GND
RIGHT
+12V
1521
ANA_OUT_LEFT
AA_GND
ANA_OUT_RIGHT
ANA_IN_RIGHT
ANA_IN_LEFT
1537
+3V
EBU_SIGNAL
SHIELD
8031
Handsoldered wire on Af7
I2C SHIFT-REGISTER
27
+5V6
D-GND
+12M
A-GND
+12A
AMP_ON
RIGHT
AA-GND
LEFT
P5
30
AB
PWRDWN
-30V
F2
F1
STBY
CDR_ON
NTC
8018
(220mm)
AWG26
9 p
8017
(340mm)
AWG26
8 p
1533
D-GND
UP_CLK
DQSY
SRDT
D-GND
SHIELD
EBU_OUT
+3V
OE_LATCH
CD_PORE
D-GND
SILD
CD_SH_DATA
SICL
CD_SH_CLK
CD_SH_STR
SW_INFO
+12M
D-GND
+5V CD
CD_R
AA-GND
CD_L
1522
RIGHT_OUT
A_GND
LEFT_OUT
+12A
A_GND
LEFT_IN
A_GND
RIGHT_IN
26
+12A
MIC
AA-GND
1528
LEFT_OUT
LEFT_IN
AA-GND
RIGHT_IN
RIGHT_OUT
HP_DET
SHORTCUT
CONNECTOR
or JUMPER on AF7
AMPLIFIER L/R
Power 5
3
1325
8322
(220mm)
POWER L/R
Power 5
1262
+5V6
D-GND
+12M
A-GND
+12A
AMP_ON
RIGHT
AA-GND
LEFT
0011
1261
P5
1263
AB
PWRDWN
-30V
F2
F1
STBY
CDR_ON
NTC
1258
08
10
09
1264
CDR_ON
P_GND
P_GND
+12V M
8903
(220)
AWG26
4p
8323
(340)
5 p
8324
(280)
4 p
8325
(280)
3 p
MAINS
Power 5
0027
1911
1912
1913
TRANS-
FORMER
8350 (220mm)
AWG26 / 4p
Ac1
Ac2
8901
(140)
2 p
Ac1
Ac2
Part of
transformer
SUPPLY CDr/w
+5V/-8V/+12V
1351
Ac1
Ac2
0011
CDR_ON
P_GND
P_GND
+12V M
0012
+5V
+5V
D_GND
D_GND
D_GND
+12V
-8V
FAN
GND
1354
FAN
(Part of
Powermodule)
8351 (280mm)
AWG 26 / 7p
8003 (400mm)
AWG 26 / 3p
8004 (140mm)
FFC 26 / 6p
FRONTBOARD 2
CDRM 99 (Design front)
1130
MIC_KILL
MIC_DET
LED_CLK
LED_ON
LED_STR
DATA
+5V6
D_GND
JOG_A
JOG_B
CDR_KEY1
CDR_KEY2
KEY_GND
JOG_VOL_A
JOG_VOL_B
0041
MIC_DET
D_GND
D_GND
MIC_KILL
8019 (140mm)
AWG 26 / 4 p
1166
MIC_DET
D_GND
D_GND
MIC_KILL
1167
+12A
MIC
AA-GND
1142
LEFT_OUT
LEFT_IN
AA-GND
RIGHT_IN
RIGHT_OUT
HP_DET
8030
(140 mm)
GND bottom plate
MIC-AMP.
With ALC
Mic Mix
HEADPHONE
CD-CHANGER
3CDC 99 DS
D-GND
UP_CLK
DQSY
SRDT
KILL_R/GND
SHIELD
EBU_OUT
+3V
KILL_L/GND/OE_L
CD_PORE
D-GND
SILD
CD_SH_DATA
SICL
CD_SH_CLK
CD_SH_STR
SW_INFO
+12M
D-GND
+5V CD
CD_R
AA-GND
CD_L
99
23
8001 (420mm) (Part of 3CDC Module)
FFC / 23 p
LEGEND
FFC TOP ENTRY
FFC SIDE ENTRY
EH TOP ENTRY
EH SIDE ENTRY
DIPMATE
BOARD to BOARD JQ
PH TOP ENTRY
PH SIDE ENTRY
XH SIDE ENTRY

Wiring Diagram FW-R8 (2000-02-22)

Block / Leveldiagram


MIC IN
Nom. 1 mV
x100
MIC ALC
TUNER
Nom. 110 mV
3CDC99-DS
Nom. 1000 mV
CDR99
Nom. 1000 mV
AUX
MIN 800 mV
MAX 2200mV
SOURCE SELECTOR
Ri=100K
Part of TDA7437
GAIN
TU +2 dB
3CDC 0 dB
CDR99 0 dB
AUX 0 dB
x5
x5
VOLUME I
Part of TDA7437
BASS ALC L&R
SOUND
Part of TDA7437
ALC CONTROL
VOLUME II FADER
Part of TDA7437
IS
IS
MUTE 1 SLOW
50 dB
POWER AMP
Headphone out
0 dB 2800 mV
Power Board
for details see Chapter 9
MUTE 1 SLOW
45 dB
SUBWOOFER OUT
0 dB 150 mV
CDR99
Nom. 500 mV
MUTE 2 SLOW
45 dB
LINE OUT
Nom. 500 mV
Sectrum analyzer
Nom. 4000 mV
AF 7 Board
for details see Chapter 8


DIGITAL IN
Nom. 500mVpp
LEVEL BUFFER
3CDC99 Dig. out
Nom. 500mVpp
DS 2
a
b
LEVEL BUFFER
CDR99 Digital in
Nom. 2000mVpp
CDR99 Dig. out
Nom. 500mVpp
DS 1
a
b
LEVEL BUFFER
Digital out
500mVpp / 75Ω
Digital switching Board



Front Board

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3CDC-Key Board

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Digital Switching Board

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Technical Front Board

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Design Front Board

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Microphone Board

- Component Layout..6-10
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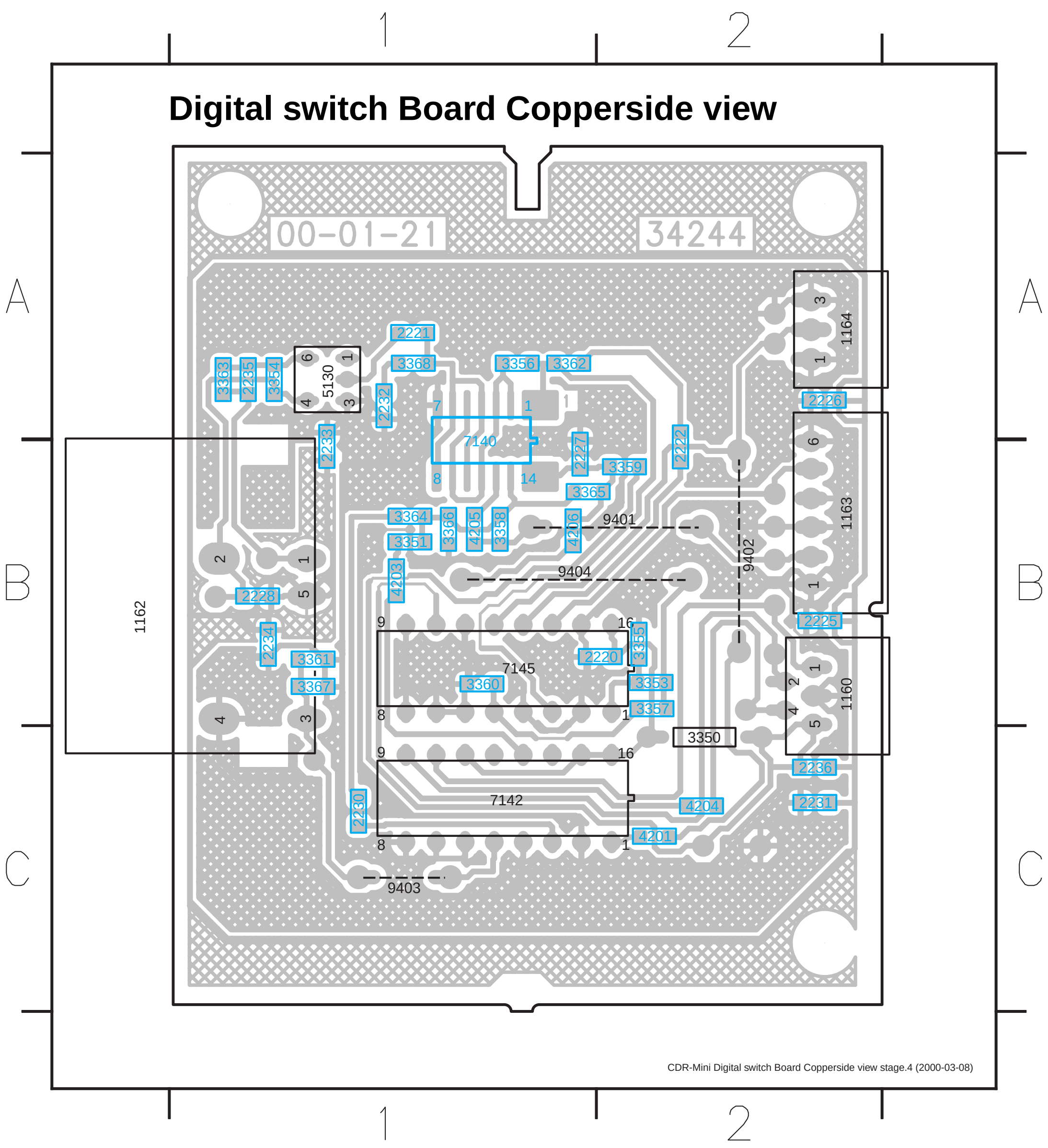
Electrical Partslist 6-11



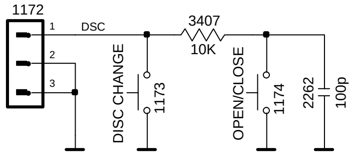
Digital switch Board Copperside view

1
2
A
B
C
00-01-21
34244
1160
1162
1163
1164
5130
7140
7142
7145
9401
9402
9403
9404
3350
2220
2221
2222
2225
2226
2227
2228
2230
2231
2232
2233
2234
2235
2236
3351
3353
3354
3355
3356
3357
3358
3359
3360
3361
3362
3363
3364
3365
3366
3367
3368
4201
4203
4204
4205
4206

CDR-Mini Digital switch Board Copperside view stage.4 (2000-03-08)

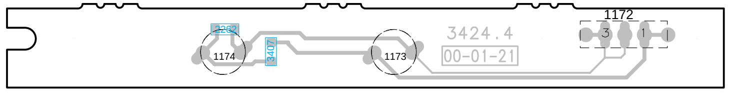
1160	B2
1162	B1
1163	B2
1164	A2
2220	B2
2221	A1
2222	B2
2225	B2
2226	A2
2227	A2
2228	B1
2230	C1
2231	C2
2232	A1
2233	B1
2234	B1
2235	A1
2236	C2
3350	C2
3351	B1
3353	B2
3354	A1
3355	B2
3356	A1
3357	B2
3358	B1
3359	B2
3360	B1
3361	B1
3362	A1
3363	A1
3364	B1
3365	B1
3366	B1
3367	B1
3368	A1
4201	C2
4203	B1
4204	C2
4205	B1
4206	B1
5130	A1
7140	B1
7142	C1
7145	B1
9401	B2
9402	B2
9403	C1
9404	B1

3 CDC-Key



1172
1
2
3
DSC
3407
10K
DISC CHANGE
1173
OPEN/CLOSE
1174
2262
100p

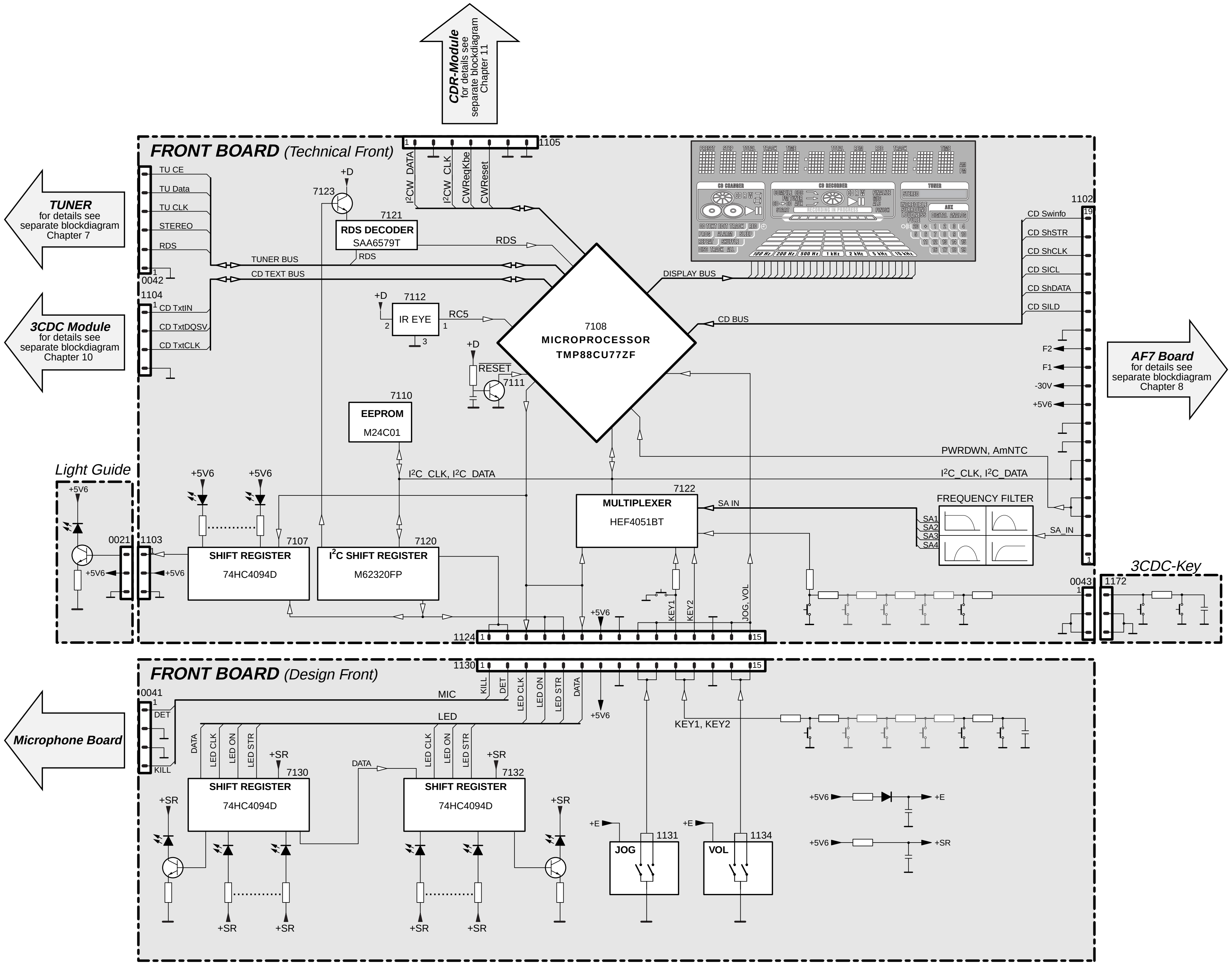
3CDC Key Board Copperside view



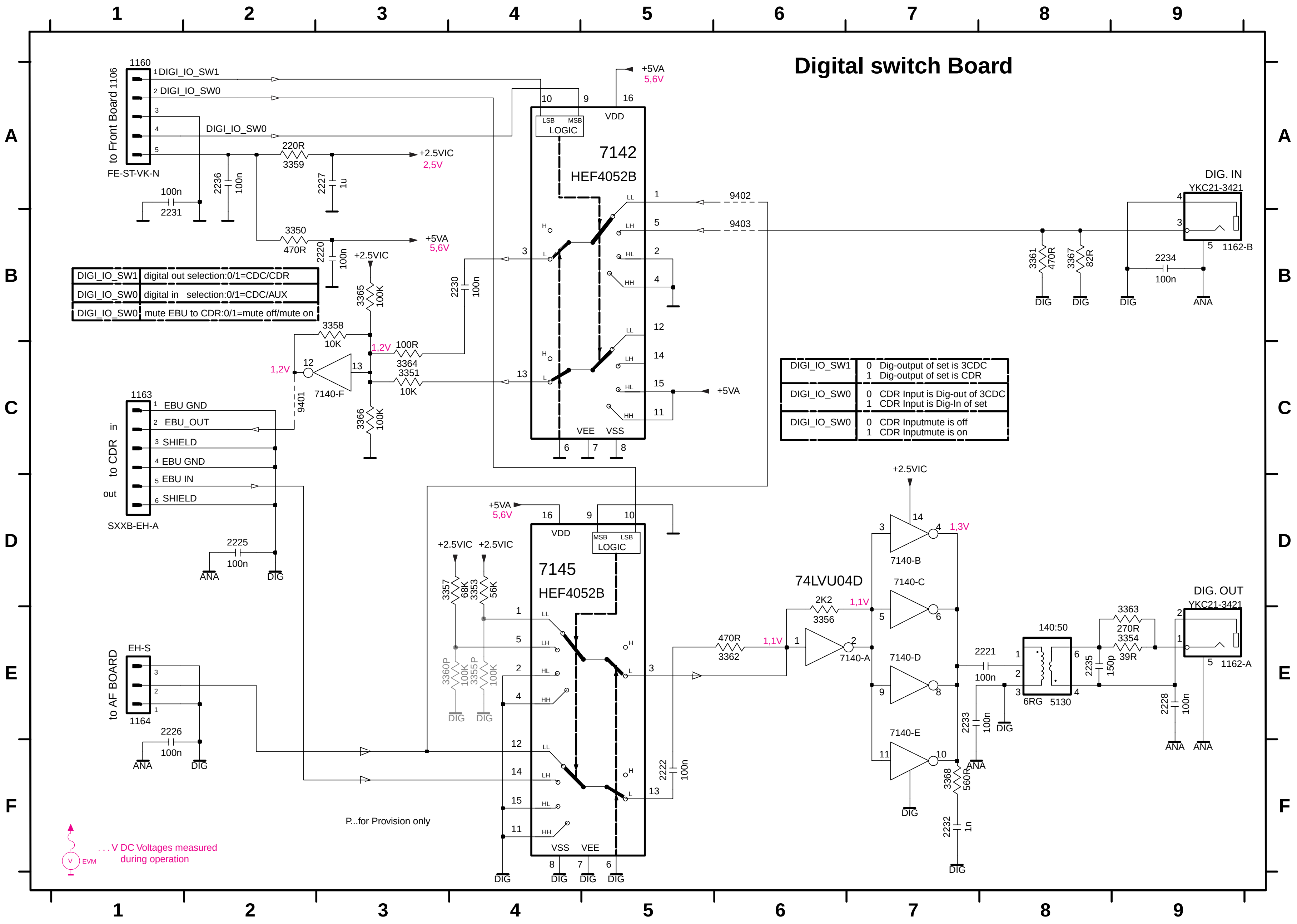
1172
1174
1173
3424.4
00-01-21

CDR-Mini 3CDC Key Board Copperside view stage .4 (2000-02-23)

Blockdiagram

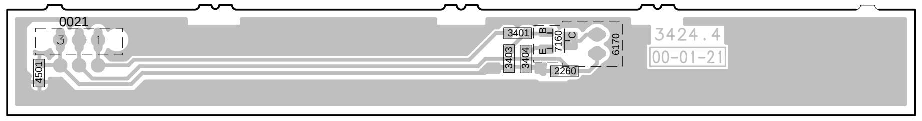

CDR-Module
for details see
separate blockdiagram
Chapter 11
FRONT BOARD (Technical Front)
1105
I2CW_DATA
I2CW_CLK
CWReqKbe
CWReset
TUNER
for details see
separate blockdiagram
Chapter 7
TU CE
TU Data
TU CLK
STEREO
RDS
0042
1104
TUNER BUS
CD TEXT BUS
3CDC Module
for details see
separate blockdiagram
Chapter 10
CD TxtIN
CD TxtDQSV
CD TxtCLK
+D
7123
7121
RDS DECODER
SAA6579T
RDS
+D
7112
IR EYE
RC5
+D
RESET
7111
7108
MICROPROCESSOR
TMP88CU77ZF
DISPLAY BUS
CD BUS
1102
CD Swinfo
CD ShSTR
CD ShCLK
CD SICL
CD ShDATA
CD SILD
F2
F1
-30V
+5V6
AF7 Board
for details see
separate blockdiagram
Chapter 8
7110
EEPROM
M24C01
PWRDWN, AmNTC
I2C_CLK, I2C_DATA
I2C_CLK, I2C_DATA
Light Guide
+5V6
+5V6
+5V6
0021
1103
7107
SHIFT REGISTER
74HC4094D
7120
I2C SHIFT REGISTER
M62320FP
7122
MULTIPLEXER
HEF4051BT
SA IN
FREQUENCY FILTER
SA1
SA2
SA3
SA4
SA_IN
3CDC-Key
0043
1172
+5V6
KEY1
KEY2
JOG_VOL
1124
1130
FRONT BOARD (Design Front)
0041
DET
KILL
MIC
LED
KILL
DET
LED CLK
LED ON
LED STR
DATA
+5V6
KEY1, KEY2
Microphone Board
DATA
LED CLK
LED ON
LED STR
+SR
7130
SHIFT REGISTER
74HC4094D
DATA
LED CLK
LED ON
LED STR
+SR
7132
SHIFT REGISTER
74HC4094D
+SR
+SR
+SR
+SR
+SR
+SR
+E
1131
JOG
+E
1134
VOL
+5V6
+E
+5V6
+SR

Digital switch Board


1 2 3 4 5 6 7 8 9
A B C D E F
1160
DIGI_IO_SW1
DIGI_IO_SW0
DIGI_IO_SW0
to Front Board 1106
FE-ST-VK-N
220R
3359
+2.5VIC
2,5V
2236 100n
2227 1u
100n
2231
3350
470R
2220 100n
+5VA
5,6V
DIGI_IO_SW1 | digital out selection:0/1=CDC/CDR
DIGI_IO_SW0 | digital in selection:0/1=CDC/AUX
DIGI_IO_SW0 | mute EBU to CDR:0/1=mute off/mute on
+2.5VIC
3365 100K
3358 10K
1,2V
1,2V
100R
3364
3351
10K
7140-F
9401
3366 100K
2230 100n
1163
EBU GND
EBU_OUT
SHIELD
EBU GND
EBU IN
SHIELD
in
to CDR
out
SXXB-EH-A
2225
100n
ANA
DIG
7142
HEF4052B
LOGIC
LSB MSB
VDD
VEE VSS
+5VA
5,6V
9402
9403
+5VA
DIG. IN
YKC21-3421
1162-B
3361 470R
3367 82R
2234 100n
DIG DIG DIG ANA
DIGI_IO_SW1 | 0 Dig-output of set is 3CDC / 1 Dig-output of set is CDR
DIGI_IO_SW0 | 0 CDR Input is Dig-out of 3CDC / 1 CDR Input is Dig-In of set
DIGI_IO_SW0 | 0 CDR Inputmute is off / 1 CDR Inputmute is on
+2.5VIC
7140-B
1,3V
74LVU04D
7140-C
2K2
3356
1,1V
470R
3362
1,1V
7140-A
7140-D
7140-E
2221 100n
140:50
6RG 5130
2235 150p
3363 270R
3354 39R
DIG. OUT
YKC21-3421
1162-A
2228 100n
ANA ANA
2233 100n
DIG
ANA
3368 560R
2232 1n
DIG
7145
HEF4052B
LOGIC
MSB LSB
VDD
VSS VEE
+5VA
5,6V
+2.5VIC +2.5VIC
3357 68K
3353 56K
3360P 100K
3355P 100K
DIG DIG
2222 100n
EH-S
to AF BOARD
1164
2226
100n
ANA DIG
P...for Provision only
. . . V DC Voltages measured during operation
EVM
DIG DIG DIG DIG

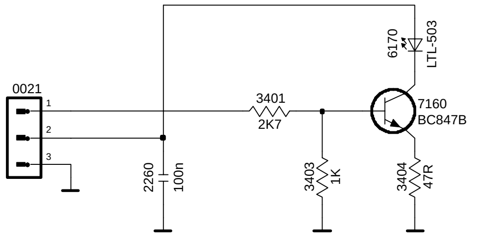
1160	A1
1162-A	E9
1162-B	B9
1163	C1
1164	E1
2220	B3
2221	E8
2222	F5
2225	D2
2226	E1
2227	A3
2228	E9
2230	B4
2231	B1
2232	F7
2233	E7
2234	B9
2235	E8
2236	A2
3350	B2
3351	C3
3353	D4
3354	E9
3355	E4
3356	E6
3357	D3
3358	B3
3359	A2
3360	E3
3361	B8
3362	E6
3363	E9
3364	C3
3365	B3
3366	C3
3367	B8
3368	F7
5130	E8
7140-A	E6
7140-B	D7
7140-C	D7
7140-D	E7
7140-E	E7
7140-F	C3
7142	A5
7145	D4
9401	C2
9402	A6
9403	B6
F600	A2
F601	A2
F602	E9
F603	A2
F604	E9
F605	A1
F606	A2
F607	C2
F608	B9
F609	D2
F610	E1
F611	E1
F612	E1

Light Guide Copperside view


0021
3401
3403
3404
7160
2260
6170
3424.4
00-01-21

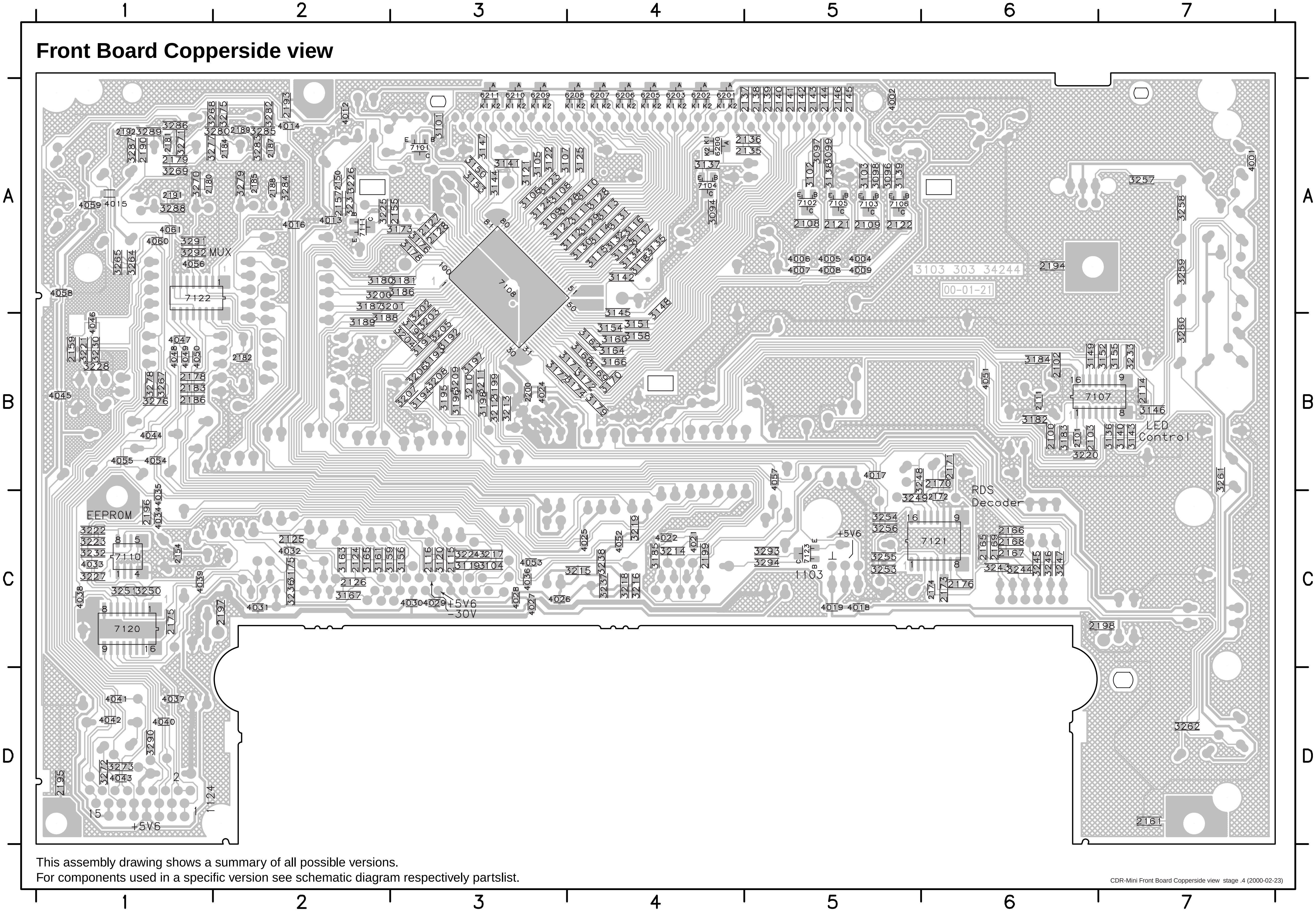
CDR-Mini LED Board Copperside view stage .4 (2000-02-23)

Light Guide Board


0021
3401
2K7
7160
BC847B
6170
LTL-503
2260
100n
3403
1K
3404
47R

2100	B6
2101	B6
2102	B6
2103	B6
2108	A5
2109	A5
2111	B6
2114	B7
2115	C3
2116	C3
2121	A5
2122	A5
2124	C2
2125	C2
2126	C2
2127	A3
2128	A3
2135	A5
2136	A5
2137	A5
2138	A5
2139	A5
2140	A5
2141	A5
2142	A5
2143	A5
2144	A5
2145	A5
2146	A5
2150	A2
2154	C1
2155	A3
2157	A2
2159	B1
2161	D7
2165	C6
2166	C6
2167	C6
2168	C6
2169	C6
2170	B6
2171	B6
2172	C6
2173	C6
2174	C6
2175	C1
2176	C6
2178	B1
2179	A1
2180	A1
2181	A1
2182	B2
2183	B1
2184	A2
2185	A2
2186	B1
2187	A2
2188	A2
2189	A2
2190	A1
2191	A1
2192	A1
2193	A2
2194	A6
2195	D1
2196	C1
2197	C2
2198	C7
2199	C4
2200	B3
3094	A4
3096	A5
3097	A5
3098	A5
3099	A5
3101	A3
3102	A5
3103	A5
3104	C3
3105	A3
3106	A3
3107	A3
3108	A3
3109	A3
3110	A4
3111	A4
3112	A4
3113	A4
3114	A4
3115	A4
3116	A4
3117	A4
3118	A4
3119	C3
3120	C3
3121	A3
3122	A3
3123	A3
3124	A3
3125	A4
3126	A4
3127	A3
3128	A4
3129	A4
3130	A4
3131	A4
3132	A4
3133	A4
3134	A4
3135	A4
3136	B7
3137	A4
3138	A5
3139	A5
3140	B7
3141	A3
3142	A4
3143	B7
3144	A3
3145	A4
3146	B7
3147	A3
3148	A4
3149	B6
3150	A3
3151	B4
3152	B7
3153	A3
3154	B4
3155	B7
3156	C3
3158	B4
3159	C2
3160	B4
3161	C2
3162	B4
3163	C2
3164	B4
3165	C2
3166	B4
3167	C2
3168	B4
3169	B4
3170	B4
3171	B4
3172	B4
3173	A3
3174	B4
3175	C2
3176	A3
3177	B3
3178	A3
3179	B4
3180	A2
3181	A3
3182	B6
3183	B6
3184	B6
3185	C4
3186	A3
3187	A2
3188	B2
3189	B2
3190	B3
3191	B3
3192	B3
3193	B3
3194	B3
3195	B3
3196	B3
3197	B3
3198	B3
3199	B3
3200	A2
3201	A3
3202	A3
3203	B3
3204	B3
3205	B3
3206	B3
3207	B3
3208	B3
3209	B3
3210	B3
3211	B3
3212	B3
3213	B3
3214	C4
3215	C4
3216	C4
3217	C3
3218	C4
3219	C4
3220	B6
3221	B1
3222	C1
3223	C1
3224	C3
3225	A2
3226	A2
3227	C1
3228	B1
3230	B1
3231	A2
3232	C1
3233	B7
3236	C2
3237	C4
3238	C4
3243	C6
3244	C6
3245	C6
3246	C6
3247	C6
3248	B5
3249	C5
3250	C1
3251	C1
3253	C5
3254	C5
3255	C5
3256	C5
3257	A7
3258	A7
3259	A7
3260	B7
3261	B7
3262	D7
3264	A1
3265	A1
3267	B1
3268	A1
3269	A1
3270	A1
3271	A1
3272	D1
3273	D1
3275	A2
3276	B1
3277	A1
3278	B1
3279	A2
3280	A2
3282	A2
3283	A2
3284	A2
3285	A2
3286	A1
3287	A1
3288	A1
3289	A1
3290	D1
3291	A1
3292	A1
3293	C5
3294	C5
4001	A7
4002	A5
4004	A5
4005	A5
4006	A5
4007	A5
4008	A5
4009	A5
4012	A2
4013	A2
4014	A2
4015	A1
4016	A2
4017	B5
4018	C5
4019	C5
4021	C4
4022	C4
4024	B3
4025	C4
4026	C3
4027	C3
4028	C3
4029	C3
4030	C3
4031	C2
4032	C2
4033	C1
4034	C1
4035	C1
4036	C3
4037	D1
4038	C1
4039	C1
4040	D1
4041	D1
4042	D1
4043	D1
4044	B1
4045	B1
4046	B1
4047	B1
4048	B1
4049	B1
4050	B1
4051	B6
4052	C4
4053	C3
4054	B1
4055	B1
4056	A1
4057	B5
4058	A1
4059	A1
4060	A1
4061	A1
6200	A4
6201	A4
6202	A4
6203	A4
6205	A4
6206	A4
6207	A4
6208	A4
6209	A3
6210	A3
6211	A3
7101	A3
7102	A5
7103	A5
7104	A4
7105	A5
7106	A5
7107	B6
7108	A3
7110	C1
7111	A2
7120	C1
7121	C6
7122	A1
7123	C5

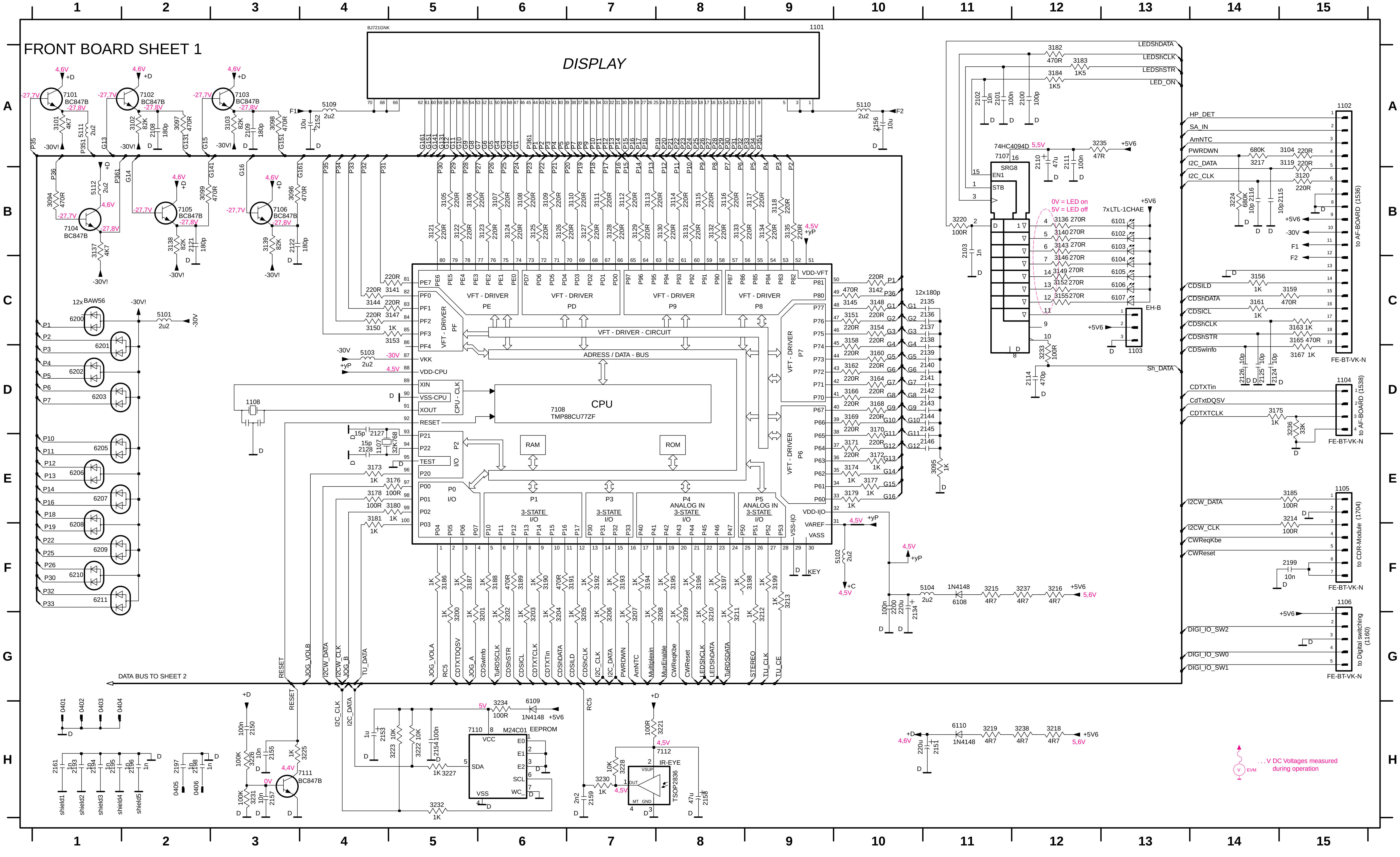
Front Board Copperside view



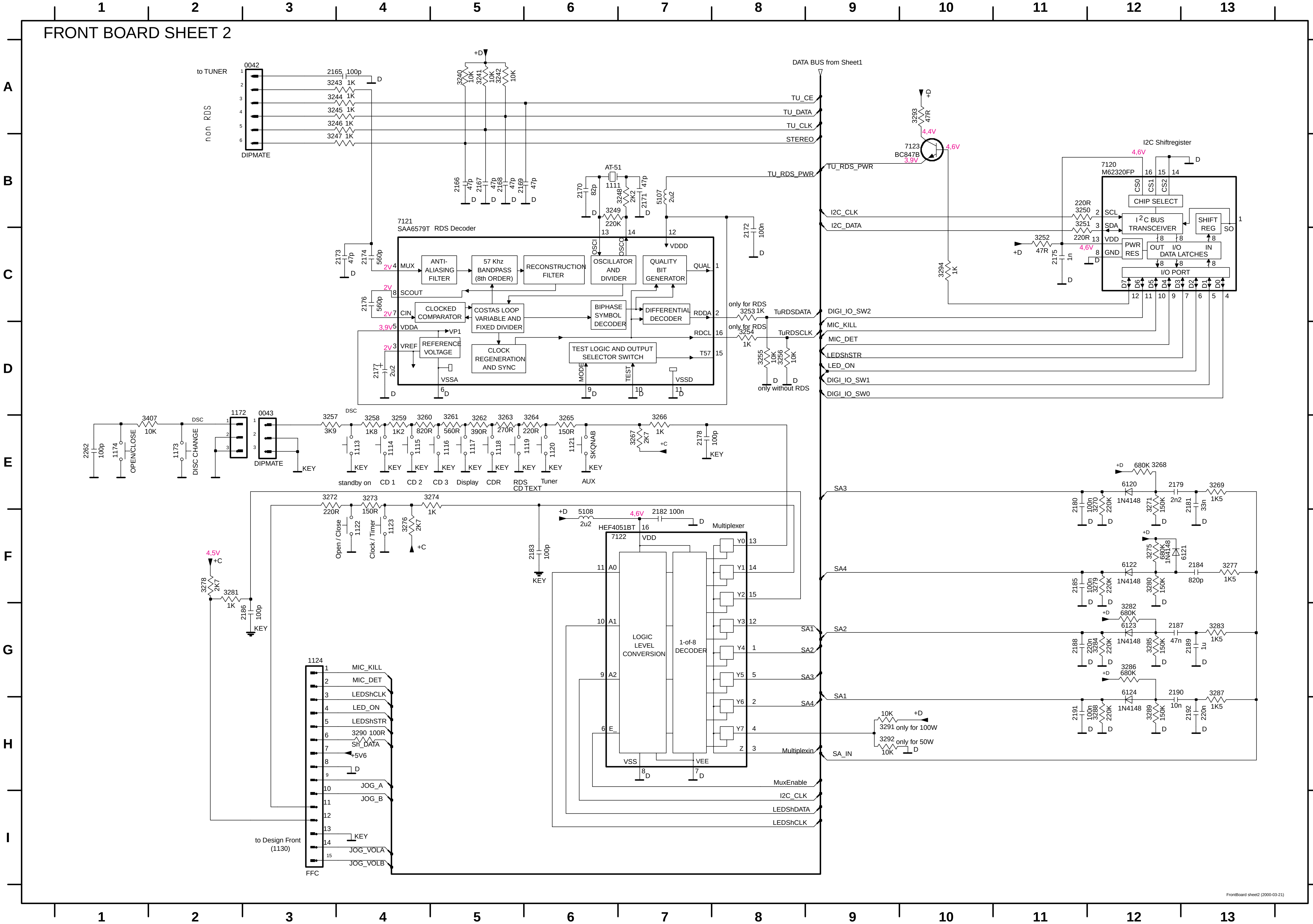
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

CDR-Mini Front Board Copperside view stage .4 (2000-02-23)

0401	G1
0402	G1
0403	G1
0404	G2
0405	H2
0406	H2
1101	A9
1102	A15
1103	D13
1104	D15
1105	E15
1106	F15
1107	E4
1108	D3
2100	A12
2101	A11
2102	A11
2103	B11
2108	A2
2109	A3
2110	A12
2111	A12
2114	D12
2115	B14
2116	B14
2121	B2
2122	B3
2124	D14
2125	D14
2126	D14
2127	E4
2128	E4
2134	G10
2135	C11
2136	C11
2137	C11
2138	C11
2139	D11
2140	D11
2141	D11
2142	D11
2143	D11
2144	D11
2145	D11
2146	E11
2150	H3
2151	H11
2152	A4
2153	H4
2154	H5
2155	H3
2156	A10
2157	H3
2158	H8
2159	H7
2161	H1
2193	H1
2194	H1
2195	H1
2196	H2
2197	H2
2198	H2
2199	F15
2200	F10
3094	B1
3095	E11
3096	B3
3097	A2
3098	A3
3099	B2
3101	A1
3102	A2
3103	A3
3104	A15
3105	B5
3106	B5
3107	B6
3108	B6
3109	B6
3110	B7
3111	B7
3112	B7
3113	B7
3114	B8
3115	B8
3116	B8
3117	B9
3118	B9
3119	A15
3120	B15
3121	B5
3122	B5
3123	B6
3124	B6
3125	B6
3126	B6
3127	B7
3128	B7
3129	B7
3130	B8
3131	B8
3132	B8
3133	B8
3134	B9
3135	B9
3136	B12
3137	B1
3138	B2
3139	B3
3140	B12
3141	C5
3142	C10
3143	B12
3144	C4
3145	C10
3146	C12
3147	C5
3148	C10
3149	C12
3150	C4
3151	C10
3152	C12
3153	C5
3154	C10
3155	C12
3156	C14
3158	C10
3159	C15
3160	D10
3161	C14
3162	D10
3163	C15
3164	D10
3165	C15
3166	D10
3167	D15
3168	D10
3169	D10
3170	D10
3171	E10
3172	E10
3173	E4
3174	E10
3175	D14
3176	E5
3177	E10
3178	E4
3179	E10
3180	E5
3181	E4
3182	A12
3183	A12
3184	A12
3185	E15
3186	F5
3187	F5
3188	F6
3189	F6
3190	F6
3191	F7
3192	F7
3193	F7
3194	F7
3195	F8
3196	F8
3197	F8
3198	F9
3199	F9
3200	G5
3201	G6
3202	G6
3203	G6
3204	G6
3205	G7
3206	G7
3207	G7
3208	G8
3209	G8
3210	G8
3211	G8
3212	G9
3213	F9
3214	E15
3215	F11
3216	F12
3217	A14
3218	H12
3219	H11
3220	B11
3221	H8
3222	H5
3223	H5
3224	B14
3225	H4
3226	H3
3227	H5
3228	H7
3230	H7
3231	H3
3232	H5
3233	D12
3234	H6
3235	A12
3236	D15
3237	F12
3238	H12
5101	C2
5102	F10
5103	D4
5104	F11
5109	A4
5110	A10
5111	A1
5112	B1
6101	B13
6102	B13
6103	B13
6104	C13
6105	C13
6106	C13
6107	C13
6108	F11
6109	H6
6110	H11
6200	C1
6201	C1
6202	D1
6203	D1
6205	E1
6206	E1
6207	E1
6208	E1
6209	F1
6210	F1
6211	F1
7101	A1
7102	A2
7103	A3
7104	B1
7105	B2
7106	B3
7107	A11
7108	D6
7110	H6
7111	H3
7112	H8


FRONT BOARD SHEET 1
DISPLAY
BJ721GNK
1101
CPU
7108
TMP88CU77ZF
VFT - DRIVER - CIRCUIT
ADRESS / DATA - BUS
RAM
ROM
74HC4094D
SRG8
7xLTL-1CHAE
0V = LED on
5V = LED off
M24C01 EEPROM
IR-EYE
TSOP2836
DATA BUS TO SHEET 2
to AF-BOARD (1536)
to AF-BOARD (1538)
to CDR-Module (1704)
to Digital switching (1160)
FE-BT-VK-N
12x BAW56
12x180p
. . .V DC Voltages measured during operation

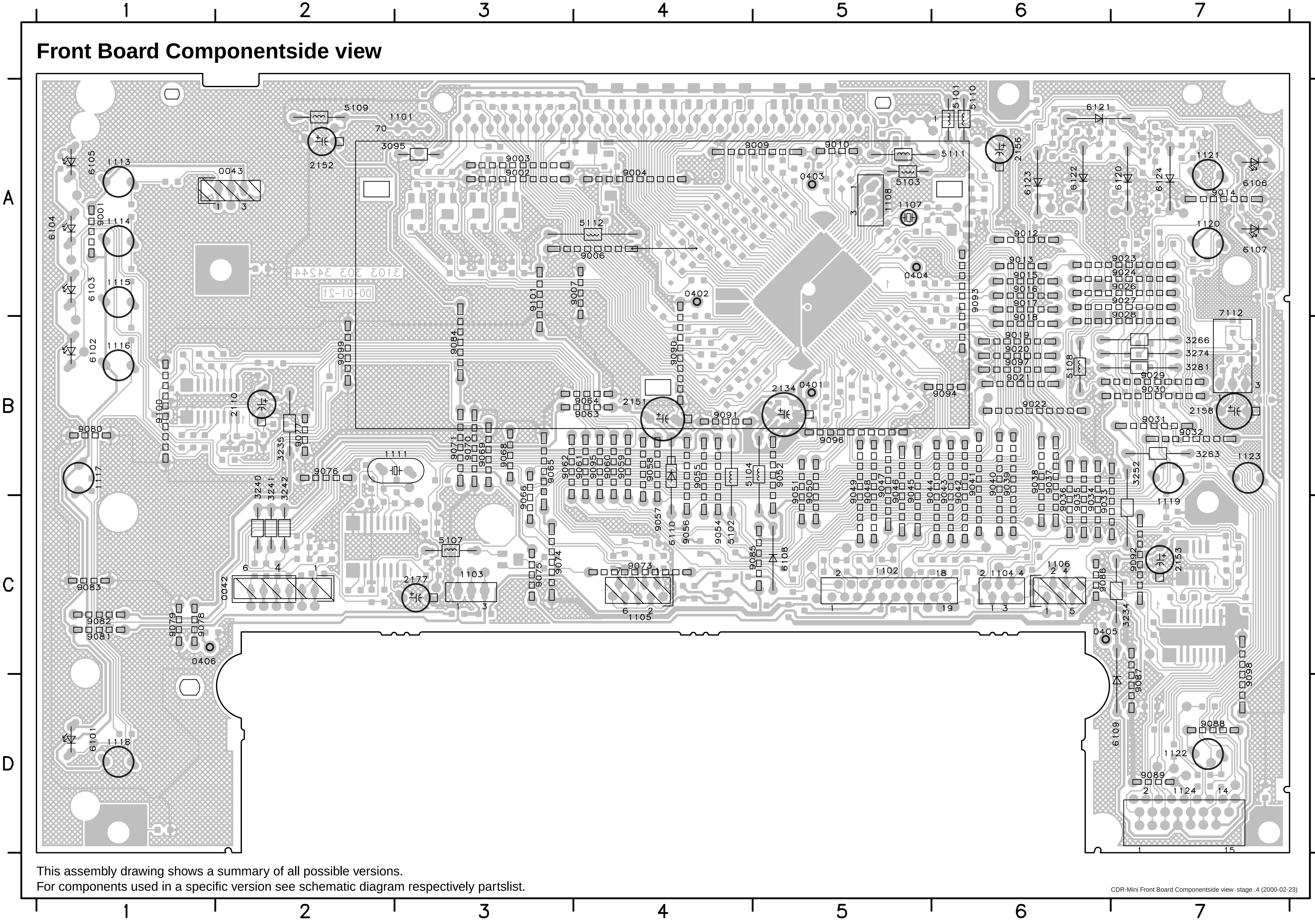
FRONT BOARD SHEET 2


to TUNER
0042
DIPMATE
non RDS
2165 100p
3243 1K
3244 1K
3245 1K
3246 1K
3247 1K
+D
3240 10K
3241 10K
3242 10K
2166 47p
2167 47p
2168 47p
2169 47p
DATA BUS from Sheet1
TU_CE
TU_DATA
TU_CLK
STEREO
TU_RDS_PWR
I2C_CLK
I2C_DATA
DIGI_IO_SW2
MIC_KILL
MIC_DET
LEDShSTR
LED_ON
DIGI_IO_SW1
DIGI_IO_SW0
AT-51
1111
2170 82p
3248 2K2
2171 47p
3249 220K
5107 2u2
2172 100n
7121
SAA6579T RDS Decoder
MUX
SCOUT
CIN
VDDA
VREF
ANTI-ALIASING FILTER
57 Khz BANDPASS (8th ORDER)
RECONSTRUCTION FILTER
OSCILLATOR AND DIVIDER
QUALITY BIT GENERATOR
QUAL
CLOCKED COMPARATOR
COSTAS LOOP VARIABLE AND FIXED DIVIDER
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
RDDA
RDCL
REFERENCE VOLTAGE
VP1
CLOCK REGENERATION AND SYNC
TEST LOGIC AND OUTPUT SELECTOR SWITCH
T57
VSSA
MODE
TEST
VSSD
VDDD
OSCI
OSCO
2173 47p
2174 560p
2176 560p
2177 2u2
2V
3,9V
only for RDS
3253 1K
TuRDSDATA
3254 1K
TuRDSCLK
3255 10K
3256 10K
only without RDS
3293 47R
+D
4,4V
7123
BC847B
3,9V
4,6V
3294 1K
I2C Shiftregister
7120
M62320FP
CHIP SELECT
I²C BUS TRANSCEIVER
SHIFT REG
PWR RES
OUT I/O IN DATA LATCHES
I/O PORT
CS0 CS1 CS2
SCL SDA VDD GND SO
D7 D6 D5 D4 D3 D2 D1 D0
3250 220R
3251 220R
3252 47R
2175 1n
4,6V
2262 100p
1174 OPEN/CLOSE
3407 10K
1173 DISC CHANGE
1172
0043
DIPMATE
DSC
KEY
3257 3K9
3258 1K8
3259 1K2
3260 820R
3261 560R
3262 390R
3263 270R
3264 220R
3265 150R
3266 1K
3267 2K7
2178 100p
1113 1114 1115 1116 1117 1118 1119 1120 1121
SKQNAB
standby on
CD 1
CD 2
CD 3
Display
CDR
RDS CD TEXT
Tuner
AUX
3272 220R
3273 150R
3274 1K
3276 2K7
1122 Open / Close
1123 Clock / Timer
+C
2183 100p
5108 2u2
4,6V
2182 100n
HEF4051BT
7122
Multiplexer
VDD
A0 A1 A2 E_
LOGIC LEVEL CONVERSION
1-of-8 DECODER
Y0 Y1 Y2 Y3 Y4 Y5 Y6 Y7 Z
VSS
VEE
SA1 SA2 SA3 SA4
Multiplexin
SA_IN
MuxEnable
I2C_CLK
LEDShDATA
LEDShCLK
4,5V
3278 2K7
3281 1K
2186 100p
1124
MIC_KILL
MIC_DET
LEDShCLK
LED_ON
LEDShSTR
3290 100R
Sh_DATA
+5V6
JOG_A
JOG_B
JOG_VOLA
JOG_VOLB
to Design Front (1130)
FFC
10K
3291 only for 100W
3292 only for 50W
10K
SA3
SA4
SA2
SA1
680K 3268
6120 1N4148
2179 2n2
3269 1K5
2180 100n
3270 220K
3271 150K
2181 33n
3275 680K
6121 1N4148
6122 1N4148
2184 820p
3277 1K5
2185 100n
3279 220K
3280 150K
3282 680K
6123 1N4148
2187 47n
3283 1K5
2188 220n
3284 220K
3285 150K
2189 1u
3286 680K
6124 1N4148
2190 10n
3287 1K5
2191 100n
3288 220K
3289 150K
2192 220n
1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H I
FrontBoard sheet2 (2000-03-21)

Ref	Pos
0042	A3
0043	E3
1111	B6
1113	E4
1114	E4
1115	E4
1116	E5
1117	E5
1118	E5
1119	E6
1120	E6
1121	E6
1122	F4
1123	F4
1124	G3
2165	A3
2166	B5
2167	B5
2168	B5
2169	B5
2170	B6
2171	B7
2172	C8
2173	C4
2174	C4
2175	C11
2176	C4
2177	D4
2178	E7
2179	E12
2180	E11
2181	E13
2182	F7
2183	F6
2184	F13
2185	F11
2186	G3
2187	G12
2188	G11
2189	G13
2190	G12
2191	H11
2192	H13
3240	A5
3241	A5
3242	A5
3243	A3
3244	A3
3245	A3
3246	A3
3247	B3
3248	B7
3249	B6
3250	B11
3251	B11
3252	C11
3253	C8
3254	D8
3255	D8
3256	D8
3257	D3
3258	E4
3259	E4
3260	D4
3261	D5
3262	E5
3263	D5
3264	D6
3265	E6
3266	E7
3267	E7
3268	E12
3269	E13
3270	E12
3271	E12
3272	E3
3273	E4
3274	E5
3275	F12
3276	F4
3277	F13
3278	F2
3279	F12
3280	F12
3281	F2
3282	G12
3283	G13
3284	G12
3285	G12
3286	G12
3287	G13
3288	H12
3289	H12
3290	H4
3291	H9
3292	H9
3293	A10
3294	C10
5107	B7
5108	F6
6120	E12
6121	F13
6122	F12
6123	G12
6124	G12
7120	B12
7121	B4
7122	F6
7123	B10
F424	G10
F425	G10
F426	F10
F427	E10
F478	A3
F479	A3
F480	A3
F481	A3
F482	A3
F483	B3
F484	C6
F485	B7
F486	C7
F487	D8
F488	D8
F489	E3
F490	E3
F491	G4
F492	G4
F493	G4
F494	H4
F495	H4
F496	H4
F497	H4
F498	H4
F499	H4
F500	H4
F501	I3
F502	I3
F503	I4
F504	I4
F505	I4
F506	H8

0042 C2	0406 C1	1107 A5	1117 B1	1124 D7	2158 B7	3242 B2	5102 C4	5111 A6	6106 A7	6122 A6	9004 A4	9014 A7	9021 B6	9029 B7	9036 C6	9043 B6	9050 B5	9058 B4	9065 B3	9074 C3	9081 C1	9088 D7	9095 B4
0043 A2	1101 A3	1108 A5	1118 D1	2110 B2	2177 C3	3252 B7	5103 A5	5112 A4	6107 A7	6123 A6	9006 A4	9015 A6	9022 B6	9030 B7	9037 B6	9044 B5	9051 B5	9059 B4	9066 C3	9075 C3	9082 C1	9089 D7	9096 B5
0401 B5	1102 C5	1111 B3	1119 C7	2134 B5	3095 A2	3263 B7	5104 B4	6101 D1	6108 C5	6124 A7	9007 A4	9016 A6	9023 A7	9031 B7	9038 B6	9045 B5	9052 B5	9060 B4	9068 B3	9076 B2	9083 C1	9090 B4	9097 B6
0402 A4	1103 C3	1113 A1	1120 A7	2151 B4	3234 C7	3266 B7	5107 C3	6102 B1	6109 D7	7112 A7	9009 A5	9017 A6	9024 A7	9032 B7	9039 B6	9046 B5	9054 C4	9061 B4	9069 B3	9077 B2	9084 B3	9091 B4	9098 D7
0403 A5	1104 C6	1114 A1	1121 A7	2152 A2	3235 B2	3274 B7	5108 B6	6103 A1	6110 C4	9001 A1	9010 A5	9018 B6	9026 A7	9033 C6	9040 B6	9047 B5	9055 B4	9062 B3	9070 B3	9078 C1	9085 C4	9092 C7	9099 B2
0404 A5	1105 C4	1115 A1	1122 D7	2153 C7	3240 B2	3281 B7	5109 A2	6104 A1	6120 A7	9002 A3	9012 A6	9019 B6	9027 A7	9034 C6	9041 B6	9048 B5	9056 C4	9063 B4	9071 B3	9079 C1	9086 C6	9093 A6	9100 B1
0405 C6	1106 C6	1116 B1	1123 B7	2156 A6	3241 B2	5101 A6	5110 A6	6105 A1	6121 A6	9003 A3	9013 A6	9020 B6	9028 A7	9035 C6	9042 B6	9049 B5	9057 C4	9064 B4	9073 C4	9080 B1	9087 D7	9094 B6	9101 A3

Front Board Componentside view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3103 303 34244
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3263
1123
1119
3252
9080
9100
2110
3235
9077
9076
1111
2151
2134
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0406
0042
3240
3241
3242
5107
2177
1103
9073
1105
1102
1104
1106
9086
9092
2153
3234
0405
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0042
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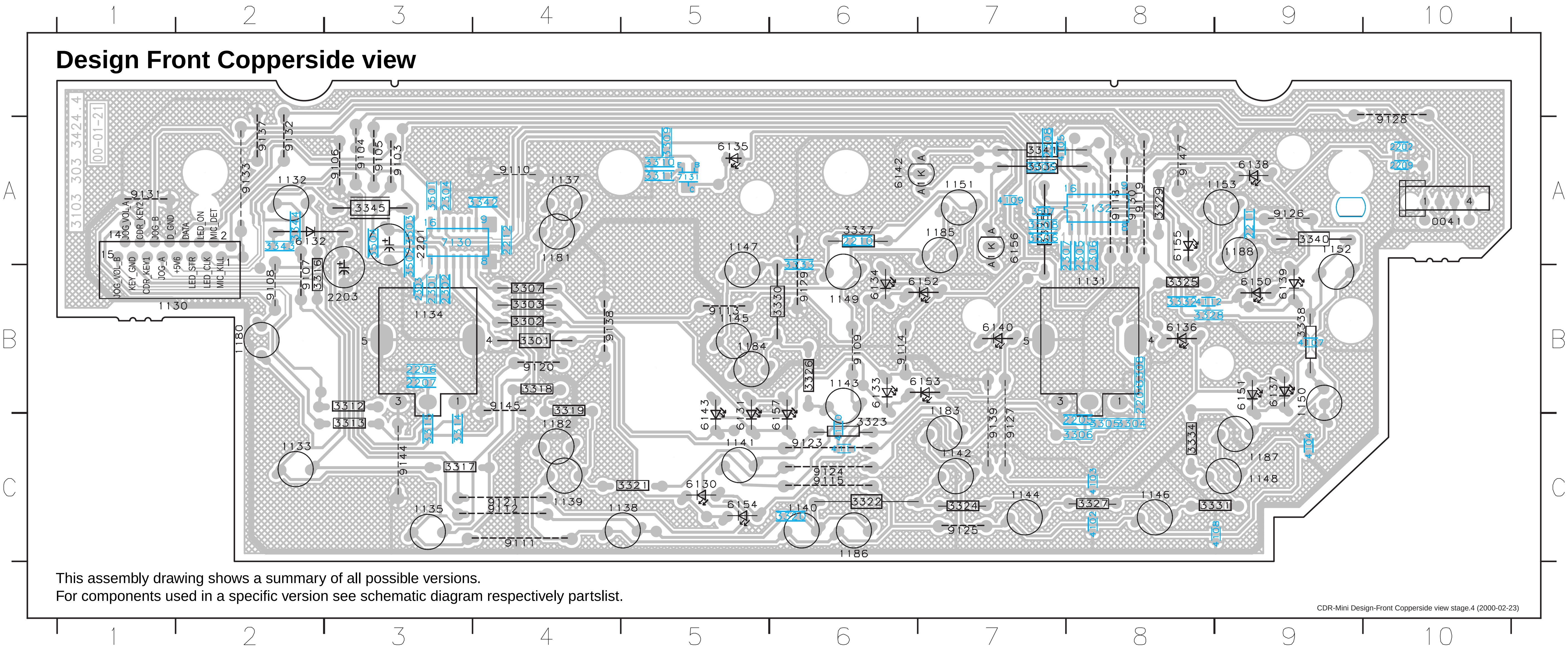
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

CDR-Mini Front Board Componentside view stage .4 (2000-02-23)

0041 A10	1139 C4	1148 C9	1183 B7	2204 B8	2304 A3	3305 C8	3318 B4	3327 C8	3337 A6	3501 A3	4103 C8	6130 C5	6139 B9	6155 A8	9106 A3	9115 C6	9127 C7	9139 C7
1130 B1	1140 C6	1149 B6	1184 B5	2205 C8	2305 A8	3306 C8	3319 B4	3328 B8	3338 B9	3502 A3	4104 C9	6131 C5	6140 B7	6156 A7	9107 B2	9118 A8	9128 A10	9144 C3
1131 B8	1141 C5	1150 B9	1185 A7	2206 B3	2306 A8	3307 B4	3320 C6	3329 A8	3339 A7	3503 A3	4105 A7	6132 A2	6142 A6	6157 C6	9108 B2	9119 A8	9129 B6	9145 B4
1132 A2	1142 C7	1151 A7	1186 C6	2207 B3	2307 A7	3312 B3	3321 C5	3330 B6	3340 A9	3504 A3	4107 B9	6133 B6	6143 C5	7130 A3	9109 B6	9120 B4	9130 A8	9147 A8
1133 C2	1143 B6	1152 A9	1187 C9	2211 A9	2308 A7	3313 C3	3322 C6	3331 C9	3341 A7	3505 A7	4108 C9	6134 B6	6150 B9	7131 A5	9110 A4	9121 C4	9131 A1	
1134 B3	1144 C7	1153 A9	1188 A9	2212 A4	3301 B4	3314 C3	3323 C6	3332 B8	3342 A4	3506 A7	4109 A7	6135 A5	6151 B9	7132 A8	9111 C4	9123 C6	9132 A2	
1135 C3	1145 B5	1180 B2	2201 A3	2301 B3	3302 B4	3315 C3	3324 C7	3333 A6	3343 A2	3507 A7	4110 C6	6136 B8	6152 B7	9103 A3	9112 C4	9124 C6	9133 A2	
1137 A4	1146 C8	1181 A4	2202 A10	2302 B3	3303 B4	3316 B2	3325 B8	3334 C8	3344 A2	3508 A7	4111 C6	6137 B9	6153 B7	9104 A3	9113 B5	9125 C7	9137 A2	
1138 C5	1147 A5	1182 C4	2203 B3	2303 B3	3304 C8	3317 C3	3326 B6	3335 A7	3345 A3	4102 C8	4112 B8	6138 A9	6154 C5	9105 A3	9114 B6	9126 A9	9138 B4	

Design Front Copperside view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A
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C
3103 303 3424 4
00-01-21
1130
JOG_VOL_B
KEY_GND
CDR_KEY1
JOG_A
+5V6
LED_STR
LED_CLK
MIC_KILL
JOG_VOL_A
CDR_KEY2
JOG_B
D_GND
DATA
LED_ON
MIC_DET
9131
9137
9132
9133
1132
3345
6132
2203
9107
3316
9108
1180
1133
1134
2201
7130
3501
2304
3342
9106
9104
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9103
9110
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7131
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9113
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3333
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9119
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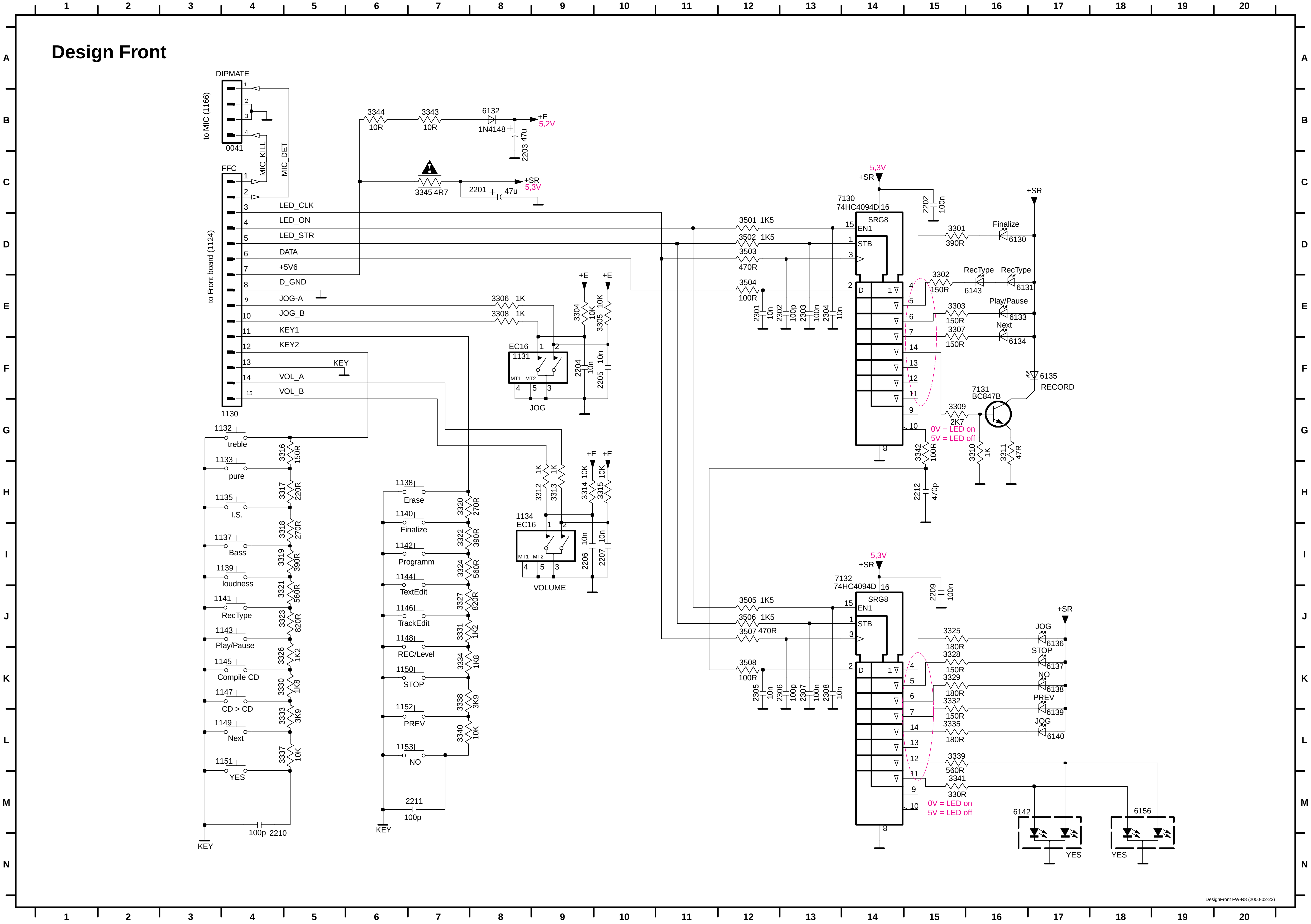
1152
6150
6139
6136
3328
3332
3338
4107
6151
6137
1150
1187
1148
3334
9128
2202
2209
0041
2205
3305
3304
3306

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

CDR-Mini Design-Front Copperside view stage.4 (2000-02-23)

Design Front


DIPMATE
to MIC (1166)
0041
MIC_KILL
MIC_DET
FFC
to Front board (1124)
LED_CLK
LED_ON
LED_STR
DATA
+5V6
D_GND
JOG-A
JOG_B
KEY1
KEY2
KEY
VOL_A
VOL_B
1130
3344 10R
3343 10R
6132 1N4148
2203 47u
+E 5,2V
3345 4R7
2201 47u
+SR 5,3V
3306 1K
3308 1K
3304 10K
3305 10K
2204 10n
2205 10n
EC16 1131
MT1 MT2
JOG
1134 EC16
VOLUME
3312 1K
3313 1K
3314 10K
3315 10K
2206 10n
2207 10n
1132 treble
1133 pure
1135 I.S.
1137 Bass
1139 loudness
1141 RecType
1143 Play/Pause
1145 Compile CD
1147 CD > CD
1149 Next
1151 YES
3316 150R
3317 220R
3318 270R
3319 390R
3321 560R
3323 820R
3326 1K2
3330 1K8
3333 3K9
3337 10K
100p 2210
KEY
1138 Erase
1140 Finalize
1142 Programm
1144 TextEdit
1146 TrackEdit
1148 REC/Level
1150 STOP
1152 PREV
1153 NO
3320 270R
3322 390R
3324 560R
3327 820R
3331 1K2
3334 1K8
3338 3K9
3340 10K
2211 100p
KEY
7130 74HC4094D
SRG8
EN1
STB
D
2202 100n
3501 1K5
3502 1K5
3503 470R
3504 100R
2301 10n
2302 100p
2303 100n
2304 10n
3301 390R
Finalize 6130
3302 150R
RecType 6143
RecType 6131
3303 150R
Play/Pause 6133
3307 150R
Next 6134
6135 RECORD
7131 BC847B
3309 2K7
0V = LED on
5V = LED off
3342 100R
3310 1K
3311 47R
2212 470p
7132 74HC4094D
2209 100n
3505 1K5
3506 1K5
3507 470R
3508 100R
2305 10n
2306 100p
2307 100n
2308 10n
3325 180R
JOG 6136
3328 150R
STOP 6137
3329 180R
NO 6138
3332 150R
PREV 6139
3335 180R
JOG 6140
3339 560R
3341 330R
0V = LED on
5V = LED off
6142
YES
6156
YES

DesignFront FW-R8 (2000-02-22)

0041 B4
1130 G4
1131 F8
1132 G4
1133 H4
1134 H8
1135 H4
1137 I4
1138 H7
1139 I4
1140 H7
1141 J4
1142 I7
1143 J4
1144 I7
1145 K4
1146 J7
1147 K4
1148 J7
1149 L4
1150 K7
1151 L4
1152 L6
1153 L7
1180 G3
1181 I3
1182 J3
1183 K3
1184 K3
1185 L3
1186 I6
1187 K6
1188 L6
2201 C8
2202 C15
2203 C8
2204 F9
2205 F10
2206 I9
2207 I10
2209 J15
2210 M4
2211 M7
2212 H15
2301 E12
2302 E13
2303 E13
2304 E13
2305 K12
2306 K13
2307 K13
2308 K13
3301 D15
3302 E15
3303 E15
3304 E9
3305 E10
3306 E8
3307 E15
3308 E8
3309 G15
3310 G16
3311 G16
3312 H9
3313 H9
3314 H9
3315 H10
3316 G5
3317 H5
3318 I5
3319 I4
3320 H7
3321 J4
3322 I7
3323 J5
3324 I7
3325 J15
3326 K4
3327 J7
3328 K15
3329 K15
3330 K4
3331 J7
3332 K15
3333 L5
3334 K7
3335 L15
3337 L5
3338 K7
3339 L15
3340 L7
3341 M15
3342 G15
3343 B7
3344 B6
3345 C7
3501 D12
3502 D12
3503 D12
3504 E12
3505 J12
3506 J12
3507 J12
3508 K12
6130 D16
6131 E16
6132 B8
6133 E16
6134 F16
6135 F17
6136 J17
6137 K17
6138 K17
6139 L17
6140 L17
6142 M16
6143 E16
6150 L18
6151 K18
6152 F17
6153 E17
6154 D17
6155 K18
6156 M18
6157 E17
7130 C13
7131 F16
7132 I13
F400 C4
F401 D4
F402 D4
F403 D4
F404 D4
F405 E4
F406 E4
F407 E4
F408 E4
F409 F4
F410 F4
F411 F4
F412 F4
F413 C4
F414 A4
F415 B4
F416 B4
F417 C4
F418 L15
F419 L16
F420 M15
F421 M16
F550 D16
F551 D15
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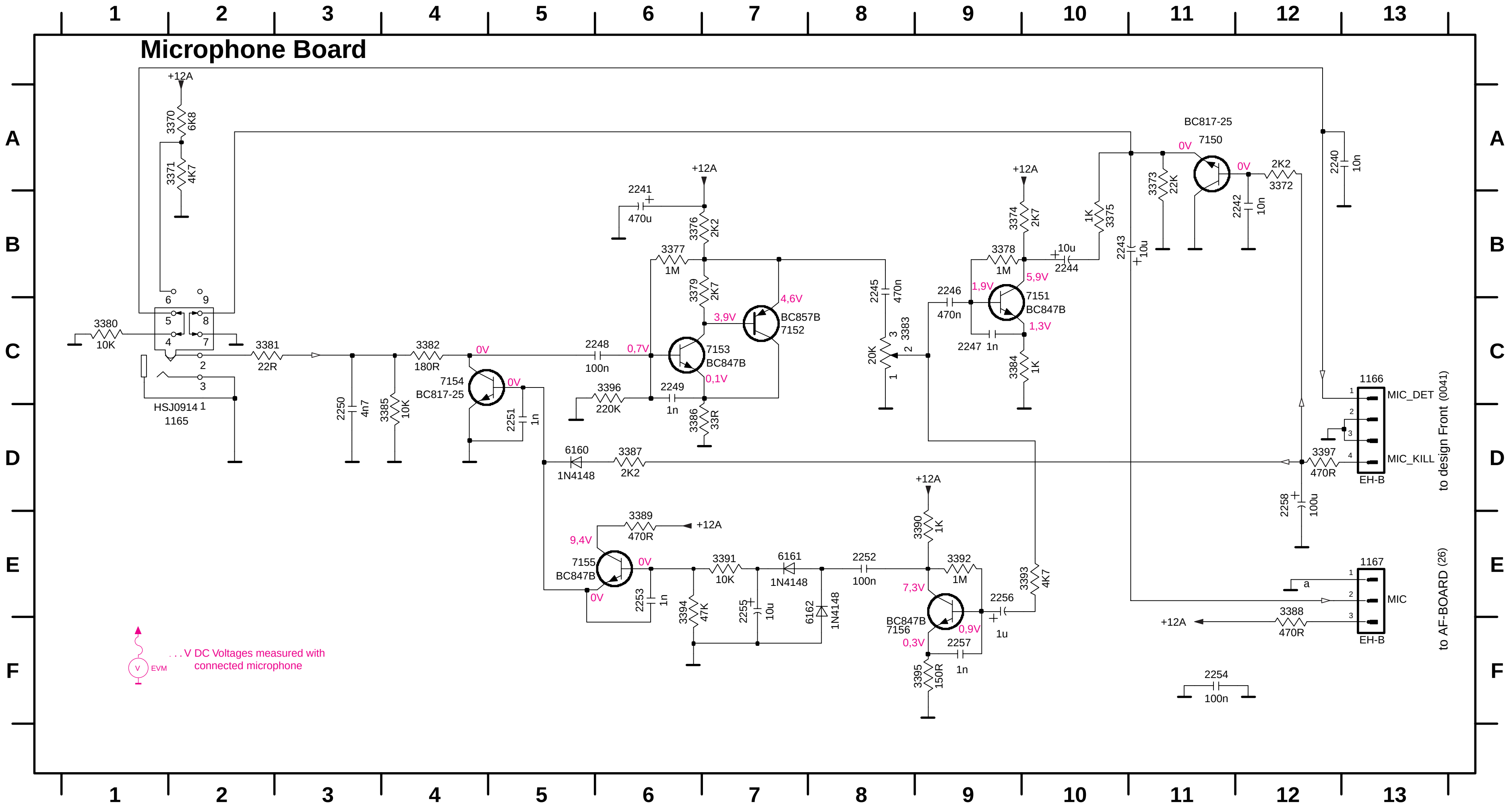
F553 E16
F554 G16
F555 J16
F556 K16
F557 K16
F558 K16
F559 L16

Microphone Board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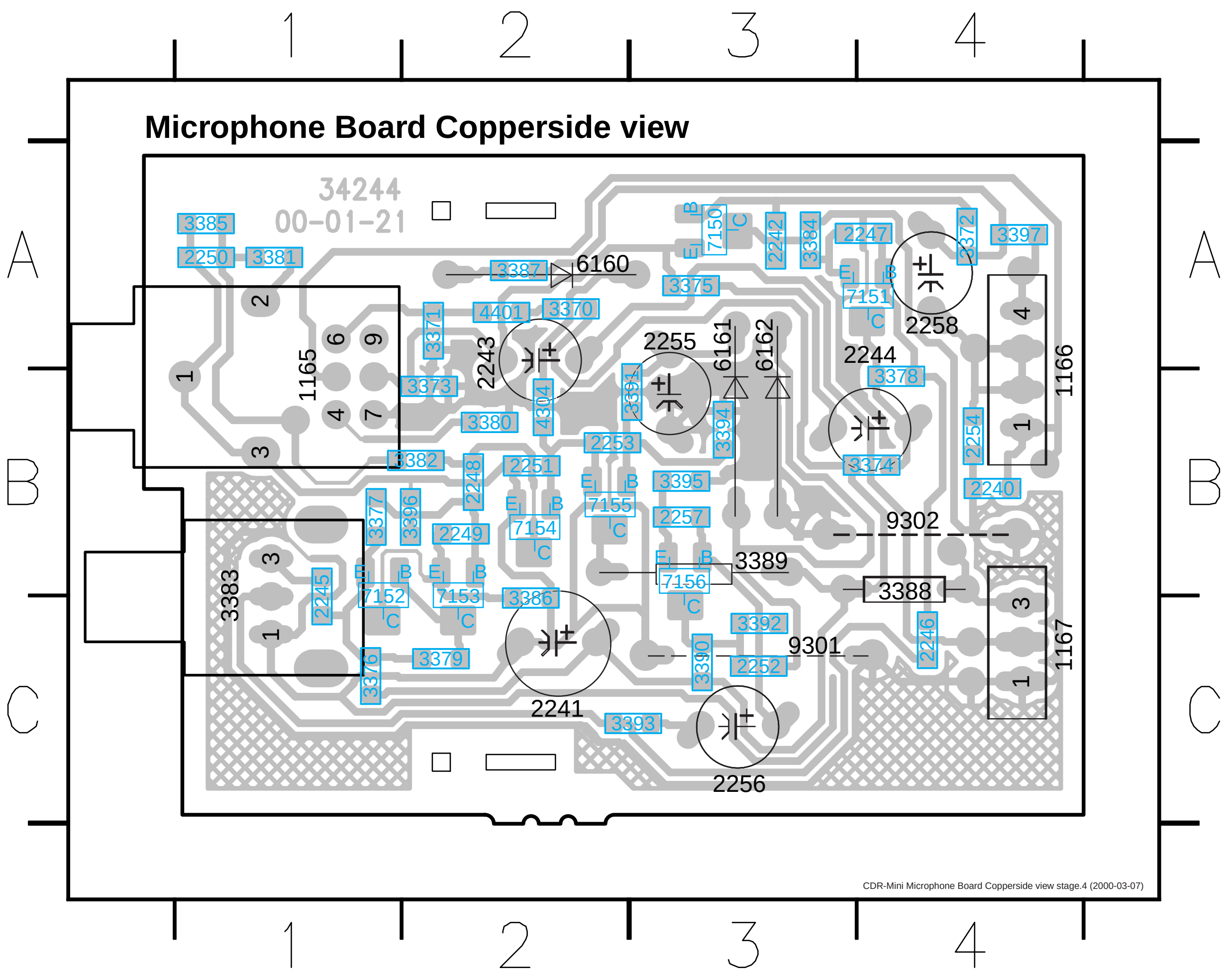
+12A
3370 6K8
3371 4K7
3380 10K
HSJ0914 1
1165
3381 22R
2250 4n7
3385 10K
3382 180R
0V
7154 BC817-25
0V
2251 1n
2248 100n
0,7V
3396 220K
2249 1n
7153 BC847B
0,1V
3,9V
4,6V
BC857B 7152
3377 1M
3379 2K7
3376 2K2
3386 33R
2241 470u
2245 470n
3383 20K
2246 470n
1,9V
5,9V
7151 BC847B
1,3V
2247 1n
3378 1M
3374 2K7
3384 1K
10u 2244
3375 1K
2243 10u
BC817-25
7150
0V
0V
3373 22K
2242 10n
2K2 3372
2240 10n
6160 1N4148
3387 2K2
3389 470R
+12A
9,4V
7155 BC847B
0V
0V
2253 1n
3394 47K
3391 10K
6161 1N4148
2255 10u
6162 1N4148
2252 100n
3390 1K
3392 1M
7,3V
BC847B 7156
0,9V
0,3V
2256 1u
2257 1n
3395 150R
3393 4K7
2258 100u
3397 470R
1166
MIC_DET
MIC_KILL
EH-B
to design Front (0041)
1167
MIC
3388 470R
EH-B
to AF-BOARD (26)
2254 100n
. . . V DC Voltages measured with connected microphone
V EVM

1165	D2
1166	C13
1167	E13
2240	A13
2241	B6
2242	B12
2243	B10
2244	B10
2245	B8
2246	B9
2247	C9
2248	C6
2249	C6
2250	D3
2251	D5
2252	E8
2253	E6
2254	E11
2255	E7
2256	E9
2257	F9
2258	D12
3370	A2
3371	A2
3372	A12
3373	A11
3374	B9
3375	B10
3376	B6
3377	B6
3378	B9
3379	B6
3380	C1
3381	C2
3382	C4
3383	C8
3384	C9
3385	D4
3386	D6
3387	D6
3388	F12
3389	E6
3390	E9
3391	E7
3392	E9
3393	E10
3394	E6
3395	F9
3396	C6
3397	D12
6160	D5
6161	E7
6162	E8
7150	A11
7151	C10
7152	C7
7153	C7
7154	C4
7155	E6
7156	F8

Microphone Board Copperside view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E B C
1 2 3 4 6 7 9
CDR-Mini Microphone Board Copperside view stage.4 (2000-03-07)

1165	B1
1166	A4
1167	C4
2240	B4
2241	B2
2242	A3
2243	B2
2244	B4
2245	B1
2246	C4
2247	A4
2248	B2
2249	B2
2250	A1
2251	B2
2252	C3
2253	B2
2254	B4
2255	B2
2256	C3
2257	B3
2258	A4
3370	A2
3371	A2
3372	A4
3373	B2
3374	B4
3375	A3
3376	C1
3377	B1
3378	B4
3379	C2
3380	B2
3381	A1
3383	B1
3382	B2
3384	A3
3385	A1
3386	C2
3387	A2
3388	B4
3389	B3
3390	C3
3391	B3
3392	C3
3393	C3
3394	B3
3395	B3
3396	B2
3397	A4
4304	B2
4401	A2
6160	A2
6161	B3
6162	B3
7150	A3
7151	A4
7152	B1
7153	B2
7154	B2
7155	B2
7156	B3
9301	C3
9302	B4

ELECTRICAL PARTSLIST FRONT BOARD

MISCELLANEOUS

1101	3103 308 52930	DISPLAY, BJ721GNK
1102	8203 303 90420	FFC SOCKET, 19P
1104	4822 267 10733	FFC SOCKET, 4P
1105	4822 267 10953	FFC SOCKET, 7P
1106	4822 267 10954	FFC SOCKET, 5P
1113	4822 276 13775	TACT SWITCH
1114	4822 276 13775	TACT SWITCH
1115	4822 276 13775	TACT SWITCH
1116	4822 276 13775	TACT SWITCH
1117	4822 276 13775	TACT SWITCH
1118	4822 276 13775	TACT SWITCH
1119	4822 276 13775	TACT SWITCH
1120	4822 276 13775	TACT SWITCH
1121	4822 276 13775	TACT SWITCH
1122	4822 276 13775	TACT SWITCH
1123	4822 276 13775	TACT SWITCH
1124	4822 265 10979	FFC SOCKET, 15P
1130	4822 265 10979	FFC SOCKET, 15P
1131	8203 303 84410	JOG ENCODER
1132	4822 276 13775	TACT SWITCH
1133	4822 276 13775	TACT SWITCH
1134	8203 303 84400	VOL ENCODER
1135	4822 276 13775	TACT SWITCH
1137	4822 276 13775	TACT SWITCH
1138	4822 276 13775	TACT SWITCH
1139	4822 276 13775	TACT SWITCH
1140	4822 276 13775	TACT SWITCH
1141	4822 276 13775	TACT SWITCH
1142	4822 276 13775	TACT SWITCH
1143	4822 276 13775	TACT SWITCH
1144	4822 276 13775	TACT SWITCH
1145	4822 276 13775	TACT SWITCH
1146	4822 276 13775	TACT SWITCH
1147	4822 276 13775	TACT SWITCH
1148	4822 276 13775	TACT SWITCH
1149	4822 276 13775	TACT SWITCH
1150	4822 276 13775	TACT SWITCH
1151	4822 276 13775	TACT SWITCH
1152	4822 276 13775	TACT SWITCH
1153	4822 276 13775	TACT SWITCH
1160	4822 267 10958	FFC-SOCKET, 5P, SIDE ENTRY
1162	4822 267 31448	CINCH SOCKET, 2-FOLD
1165	4822 267 40898	MICROPHONE SOCKET
1173	4822 276 13775	TACT SWITCH
1174	4822 276 13775	TACT SWITCH

CAPACITORS

2100 ©	5322 122 32531	100pF	5%	50V
2101 ©	4822 126 14585	100nF	10%	50V
2102 ©	4822 122 33177	10nF	20%	50V
2103 ©	5322 122 31647	1nF	10%	63V
2108 ©	4822 126 10326	180pF	5%	
2109 ©	4822 126 10326	180pF	5%	
2110	4822 124 40433	47µF	20%	25V
2111 ©	4822 126 14585	100nF	10%	50V
2114 ©	5322 122 34099	470pF	10%	63V
2115 ©	5322 122 32448	10pF	5%	50V
2116 ©	5322 122 32448	10pF	5%	50V
2121 ©	4822 126 10326	180pF	5%	
2122 ©	4822 126 10326	180pF	5%	
2124 ©	5322 122 32448	10pF	5%	50V
2125 ©	5322 122 32448	10pF	5%	50V

CAPACITORS

2126 ©	5322 122 32448	10pF	5%	50V
2127 ©	4822 126 13486	15pF	2%	63V
2128 ©	4822 126 13486	15pF	2%	63V
2134	4822 124 12245	220µF	20%	16V
2135 ©	4822 126 10326	180pF	5%	
2136 ©	4822 126 10326	180pF	5%	
2137 ©	4822 126 10326	180pF	5%	
2138 ©	4822 126 10326	180pF	5%	
2139 ©	4822 126 10326	180pF	5%	
2140 ©	4822 126 10326	180pF	5%	
2141 ©	4822 126 10326	180pF	5%	
2142 ©	4822 126 10326	180pF	5%	
2143 ©	4822 126 10326	180pF	5%	
2144 ©	4822 126 10326	180pF	5%	
2145 ©	4822 126 10326	180pF	5%	
2146 ©	4822 126 10326	180pF	5%	
2150 ©	4822 126 14585	100nF	10%	50V
2151	4822 124 12245	220µF	20%	16V
2152	4822 124 22833	10µF	20%	50V
2153	4822 124 21913	1µF	20%	63V
2154 ©	4822 126 13838	100nF	10%	50V
2155 ©	4822 122 33177	10nF	20%	50V
2156	4822 124 22833	10µF	20%	50V
2157 ©	4822 122 33177	10nF	20%	50V
2158	4822 124 81286	47µF	20%	16V
2159 ©	4822 122 33127	2,2nF	10%	63V
2161 ©	5322 122 31647	1nF	10%	63V
2165 ©	5322 122 32531	100pF	5%	50V
2166 ©	4822 126 13692	47pF	1%	63V
2167 ©	4822 126 13692	47pF	1%	63V
2168 ©	4822 126 13692	47pF	1%	63V
2169 ©	4822 126 13692	47pF	1%	63V
2170 ©	4822 126 13695	82pF	1%	63V
2171 ©	4822 126 13692	47pF	1%	63V
2172 ©	4822 126 14585	100nF	10%	50V
2173 ©	4822 126 13692	47pF	1%	63V
2174 ©	5322 116 80853	560pF	5%	63V
2175 ©	5322 122 31647	1nF	10%	63V
2176 ©	4822 122 33173	560pF	10%	63V
2177	4822 124 22652	2,2µF	20%	50V
2178 ©	5322 122 32531	100pF	5%	50V
2179 ©	4822 122 33127	2,2nF	10%	63V
2180 ©	4822 126 14585	100nF	10%	50V
2181 ©	4822 126 12105	33nF	5%	63V
2182 ©	4822 126 14585	100nF	10%	50V
2183 ©	5322 122 32531	100pF	5%	50V
2184 ©	5322 126 10184	820pF	5%	50V
2185©	4822 126 14585	100nF	10%	50V
2186 ©	5322 122 32531	100pF	5%	50V
2187 ©	4822 126 13751	47nF	10%	50V
2188 ©	4822 126 14076	220nF	20%	25V
2189 ©	4822 126 14043	1µF	20%	16V
2190 ©	4822 122 33177	10nF	20%	50V
2191 ©	4822 126 14585	100nF	10%	50V
2192 ©	4822 126 14076	220nF	20%	25V
2193 ©	5322 122 31647	1nF	10%	63V
2194 ©	5322 122 31647	1nF	10%	63V
2195 ©	5322 122 31647	1nF	10%	63V
2196 ©	5322 122 31647	1nF	10%	63V

ELECTRICAL PARTSLIST FRONT BOARD

CAPACITORS

2197	©	5322 122 31647	1nF	10%	63V
2198	©	5322 122 31647	1nF	10%	63V
2199	©	4822 122 33177	10nF	20%	50V
2200	©	4822 126 14585	100nF	10%	50V
2201		4822 124 81286	47µF	20%	16V
2202	©	4822 126 14585	100nF	10%	50V
2203		4822 124 81286	47µF	20%	16V
2204	©	4822 122 33177	10nF	20%	50V
2205	©	4822 122 33177	10nF	20%	50V
2206	©	4822 122 33177	10nF	20%	50V
2207	©	4822 122 33177	10nF	20%	50V
2209	©	4822 126 14585	100nF	10%	50V
2210	©	5322 122 32531	100pF	5%	50V
2211	©	5322 122 32531	100pF	5%	50V
2212	©	5322 122 34099	470pF	10%	63V
2220	©	4822 126 14585	100nF	10%	50V
2221	©	4822 126 14585	100nF	10%	50V
2222	©	4822 126 14585	100nF	10%	50V
2227	©	4822 126 14043	1µF	20%	16V
2228	©	4822 126 14585	100nF	10%	50V
2230	©	4822 126 14585	100nF	10%	50V
2232	©	5322 126 10511	1nF	5%	50V
2234	©	4822 126 14585	100nF	10%	50V
2235	©	5322 122 33538	150pF	5%	63V
2240	©	4822 122 33177	10nF	20%	50V
2241		4822 124 80791	470µF	20%	16V
2242	©	4822 122 33177	10nF	20%	50V
2243		4822 124 40248	10µF	20%	63V
2244		4822 124 40248	10µF	20%	63V
2245	©	4822 126 13482	470nF	20%	16V
2246	©	4822 126 13482	470nF	20%	16V
2247	©	5322 122 31647	1nF	10%	63V
2248	©	4822 126 14585	100nF	10%	50V
2249	©	5322 122 31647	1nF	10%	63V
2250	©	5322 126 10223	4,7nF	10%	63V
2251	©	5322 122 31647	1nF	10%	63V
2252	©	4822 126 14585	100nF	10%	50V
2253	©	5322 122 31647	1nF	10%	63V
2254	©	4822 126 14585	100nF	10%	50V
2255		4822 124 40248	10µF	20%	63V
2256		4822 124 21913	1µF	20%	63V
2257	©	5322 122 31647	1nF	10%	63V
2258		4822 124 41584	100µF	20%	10V
2260	©	4822 126 14585	100nF	10%	50V
2262	©	5322 122 32531	100pF	5%	50V
2301	©	4822 122 33177	10nF	20%	50V
2302	©	5322 122 32531	100pF	5%	50V
2303	©	4822 126 14585	100nF	10%	50V
2304	©	4822 122 33177	10nF	20%	50V
2305	©	4822 122 33177	10nF	20%	50V
2306	©	5322 122 32531	100pF	5%	50V
2307	©	4822 126 14585	100nF	10%	50V
2308	©	4822 122 33177	10nF	20%	50V

RESISTORS

3094	©	4822 051 20471	470Ω	5%	0,1W
3095		4822 050 11002	1kΩ	5%	0,2W
3096	©	4822 051 20471	470Ω	5%	0,1W
3097	©	4822 051 20471	470Ω	5%	0,1W
3098	©	4822 051 20471	470Ω	5%	0,1W
3099	©	4822 051 20471	470Ω	5%	0,1W
3101	©	4822 051 20472	4,7kΩ	5%	0,1W
3102	©	4822 117 11149	82kΩ	1%	0,1W
3103	©	4822 117 11149	82kΩ	1%	0,1W
3104	©	4822 117 11503	220Ω	5%	0,1W
3105	©	4822 117 11503	220Ω	5%	0,1W
3106	©	4822 117 11503	220Ω	5%	0,1W
3107	©	4822 117 11503	220Ω	5%	0,1W
3108	©	4822 117 11503	220Ω	5%	0,1W
3109	©	4822 117 11503	220Ω	5%	0,1W
3110	©	4822 117 11503	220Ω	5%	0,1W
3111	©	4822 117 11503	220Ω	5%	0,1W
3112	©	4822 117 11503	220Ω	5%	0,1W
3113	©	4822 117 11503	220Ω	5%	0,1W
3114	©	4822 117 11503	220Ω	5%	0,1W
3115	©	4822 117 11503	220Ω	5%	0,1W
3116	©	4822 117 11503	220Ω	5%	0,1W
3117	©	4822 117 11503	220Ω	5%	0,1W
3118	©	4822 117 11503	220Ω	5%	0,1W
3119	©	4822 117 11503	220Ω	5%	0,1W
3120	©	4822 117 11503	220Ω	5%	0,1W
3121	©	4822 117 11503	220Ω	5%	0,1W
3122	©	4822 117 11503	220Ω	5%	0,1W
3123	©	4822 117 11503	220Ω	5%	0,1W
3124	©	4822 117 11503	220Ω	5%	0,1W
3125	©	4822 117 11503	220Ω	5%	0,1W
3126	©	4822 117 11503	220Ω	5%	0,1W
3127	©	4822 117 11503	220Ω	5%	0,1W
3128	©	4822 117 11503	220Ω	5%	0,1W
3129	©	4822 117 11503	220Ω	5%	0,1W
3130	©	4822 117 11503	220Ω	5%	0,1W
3131	©	4822 117 11503	220Ω	5%	0,1W
3132	©	4822 117 11503	220Ω	5%	0,1W
3133	©	4822 117 11503	220Ω	5%	0,1W
3134	©	4822 117 11503	220Ω	5%	0,1W
3135	©	4822 117 11503	220Ω	5%	0,1W
3136	©	4822 117 11504	270Ω	1%	0.1W
3137	©	4822 051 20472	4,7kΩ	5%	0,1W
3138	©	4822 117 11149	82kΩ	1%	0,1W
3139	©	4822 117 11149	82kΩ	1%	0,1W
3140	©	4822 117 11504	270Ω	1%	0.1W
3141	©	4822 117 11503	220Ω	5%	0,1W
3142	©	4822 117 11503	220Ω	5%	0,1W
3143	©	4822 117 11504	270Ω	1%	0.1W
3144	©	4822 117 11503	220Ω	5%	0,1W
3145	©	4822 051 20471	470Ω	5%	0,1W
3146	©	4822 117 11504	270Ω	1%	0.1W
3147	©	4822 117 11503	220Ω	5%	0,1W
3148	©	4822 117 11503	220Ω	5%	0,1W
3149	©	4822 117 11504	270Ω	1%	0.1W
3150	©	4822 117 11503	220Ω	5%	0,1W
3151	©	4822 117 11503	220Ω	5%	0,1W
3152	©	4822 117 11504	270Ω	1%	0.1W
3153	©	4822 051 10102	1kΩ	2%	0,25W
3154	©	4822 117 11503	220Ω	5%	0,1W

ELECTRICAL PARTSLIST FRONT BOARD

RESISTORS

3155 ©	4822 117 11504	270Ω	1%	0.1W
3156 ©	4822 051 10102	1kΩ	2%	0,25W
3158 ©	4822 117 11503	220Ω	5%	0,1W
3159 ©	4822 051 20471	470Ω	5%	0,1W
3160 ©	4822 117 11503	220Ω	5%	0,1W
3161 ©	4822 051 10102	1kΩ	2%	0,25W
3162 ©	4822 117 11503	220Ω	5%	0,1W
3163 ©	4822 051 10102	1kΩ	2%	0,25W
3164 ©	4822 117 11503	220Ω	5%	0,1W
3165 ©	4822 051 20471	470Ω	5%	0,1W
3166 ©	4822 117 11503	220Ω	5%	0,1W
3167 ©	4822 051 10102	1kΩ	2%	0,25W
3168 ©	4822 117 11503	220Ω	5%	0,1W
3169 ©	4822 117 11503	220Ω	5%	0,1W
3170 ©	4822 117 11503	220Ω	5%	0,1W
3171 ©	4822 117 11503	220Ω	5%	0,1W
3172 ©	4822 051 10102	1kΩ	2%	0,25W
3173 ©	4822 051 10102	1kΩ	2%	0,25W
3174 ©	4822 051 10102	1kΩ	2%	0,25W
3175 ©	4822 051 10102	1kΩ	2%	0,25W
3176 ©	4822 051 20101	100Ω	5%	0,1W
3177 ©	4822 051 10102	1kΩ	2%	0,25W
3178 ©	4822 051 20101	100Ω	5%	0,1W
3179 ©	4822 051 10102	1kΩ	2%	0,25W
3180 ©	4822 051 10102	1kΩ	2%	0,25W
3181 ©	4822 051 10102	1kΩ	2%	0,25W
3182 ©	4822 051 20471	470Ω	5%	0,1W
3183 ©	4822 117 11139	1,5kΩ	1%	0,1W
3184 ©	4822 117 11139	1,5kΩ	1%	0,1W
3185 ©	4822 051 20101	100Ω	5%	0,1W
3186 ©	4822 051 10102	1kΩ	2%	0,25W
3187 ©	4822 051 10102	1kΩ	2%	0,25W
3188 ©	4822 051 10102	1kΩ	2%	0,25W
3189 ©	4822 051 20471	470Ω	5%	0,1W
3190 ©	4822 051 10102	1kΩ	2%	0,25W
3191 ©	4822 051 20471	470Ω	5%	0,1W
3192 ©	4822 051 10102	1kΩ	2%	0,25W
3193 ©	4822 051 10102	1kΩ	2%	0,25W
3194 ©	4822 051 10102	1kΩ	2%	0,25W
3195 ©	4822 051 10102	1kΩ	2%	0,25W
3196 ©	4822 051 10102	1kΩ	2%	0,25W
3197 ©	4822 051 10102	1kΩ	2%	0,25W
3198 ©	4822 051 10102	1kΩ	2%	0,25W
3199 ©	4822 051 10102	1kΩ	2%	0,25W
3200 ©	4822 051 10102	1kΩ	2%	0,25W
3201 ©	4822 051 10102	1kΩ	2%	0,25W
3202 ©	4822 051 10102	1kΩ	2%	0,25W
3203 ©	4822 051 10102	1kΩ	2%	0,25W
3204 ©	4822 051 10102	1kΩ	2%	0,25W
3205 ©	4822 051 10102	1kΩ	2%	0,25W
3206 ©	4822 051 10102	1kΩ	2%	0,25W
3207 ©	4822 051 10102	1kΩ	2%	0,25W
3208 ©	4822 051 10102	1kΩ	2%	0,25W
3209 ©	4822 051 10102	1kΩ	2%	0,25W
3210 ©	4822 051 10102	1kΩ	2%	0,25W
3211 ©	4822 051 10102	1kΩ	2%	0,25W
3212 ©	4822 051 10102	1kΩ	2%	0,25W
3213 ©	4822 051 10102	1kΩ	2%	0,25W
3214 ©	4822 051 20101	100Ω	5%	0,1W
3215 ©	4822 051 20478	4,7Ω	5%	0,1W

RESISTORS

3216 ©	4822 051 20478	4,7Ω	5%	0,1W
3217 ©	4822 051 20684	680kΩ	5%	0,1W
3218 ©	4822 051 20478	4,7Ω	5%	0,1W
3219 ©	4822 051 20478	4,7Ω	5%	0,1W
3220 ©	4822 051 20101	100Ω	5%	0,1W
3221 ©	4822 051 20101	100Ω	5%	0,1W
3222 ©	4822 117 10833	10kΩ	1%	0,1W
3223 ©	4822 117 10833	10kΩ	1%	0,1W
3224 ©	4822 051 20684	680kΩ	5%	0,1W
3225 ©	4822 051 10102	1kΩ	2%	0,25W
3226 ©	4822 117 10837	100kΩ	1%	0,1W
3227 ©	4822 051 10102	1kΩ	2%	0,25W
3228 ©	4822 117 10833	10kΩ	1%	0,1W
3230 ©	4822 051 10102	1kΩ	2%	0,25W
3231 ©	4822 117 10837	100kΩ	1%	0,1W
3232 ©	4822 051 10102	1kΩ	2%	0,25W
3233 ©	4822 051 20101	100Ω	5%	0,1W
3234	4822 116 52175	100Ω	5%	0,5W
3235	4822 116 52195	47Ω	5%	0,5W
3236 ©	4822 051 20333	33kΩ	5%	0,1W
3237 ©	4822 051 20478	4,7Ω	5%	0,1W
3238 ©	4822 051 20478	4,7Ω	5%	0,1W
3240	4822 050 21003	10kΩ	2%	0,25W
3241	4822 050 21003	10kΩ	2%	0,25W
3242	4822 050 21003	10kΩ	2%	0,25W
3243 ©	4822 051 10102	1kΩ	2%	0,25W
3244 ©	4822 051 10102	1kΩ	2%	0,25W
3245 ©	4822 051 10102	1kΩ	2%	0,25W
3246 ©	4822 051 10102	1kΩ	2%	0,25W
3247 ©	4822 051 10102	1kΩ	2%	0,25W
3248 ©	4822 117 11449	2,2kΩ	1%	0,1W
3249 ©	4822 117 13579	220kΩ	1%	0.1W
3250 ©	4822 117 11503	220Ω	5%	0,1W
3251 ©	4822 117 11503	220Ω	5%	0,1W
3252	4822 116 52195	47Ω	5%	0,5W
3253 ©	4822 051 10102	1kΩ	2%	0,25W
3254 ©	4822 051 10102	1kΩ	2%	0,25W
3255 ©	4822 117 10833	10kΩ	1%	0,1W
3256 ©	4822 117 10833	10kΩ	1%	0,1W
3257 ©	4822 051 20392	3,9kΩ	5%	0,1W
3258 ©	4822 051 20182	1,8kΩ	5%	0,1W
3259 ©	4822 051 20122	1,2kΩ	5%	0,1W
3260 ©	4822 117 11454	820Ω	1%	
3261 ©	4822 051 20561	560Ω	5%	0,1W
3262 ©	4822 051 20391	390Ω	5%	0,1W
3263	4822 116 83876	270Ω	5%	0.16W
3264 ©	4822 117 11503	220Ω	5%	0,1W
3265 ©	4822 117 10353	150Ω	5%	0,1W
3266	4822 050 11002	1kΩ	5%	0,2W
3267 ©	4822 117 12955	2,7kΩ	1%	0,1W
3268 ©	4822 051 20684	680kΩ	5%	0,1W
3269 ©	4822 117 11139	1,5kΩ	1%	0,1W
3270 ©	4822 117 13579	220kΩ	1%	0.1W
3271 ©	4822 051 20154	150kΩ	5%	0,1W
3272 ©	4822 117 11503	220Ω	5%	0,1W
3273 ©	4822 117 10353	150Ω	5%	0,1W
3274	4822 050 11002	1kΩ	5%	0,2W
3275 ©	4822 051 20684	680kΩ	5%	0,1W
3276 ©	4822 117 12955	2,7kΩ	1%	0,1W
3277 ©	4822 117 11139	1,5kΩ	1%	0,1W

ELECTRICAL PARTSLIST FRONT BOARD

RESISTORS

3278 ©	4822 117 12955	2,7kΩ	1%	0,1W
3279 ©	4822 117 13579	220kΩ	1%	0.1W
3280 ©	4822 051 20154	150kΩ	5%	0,1W
3281	4822 050 11002	1kΩ	5%	0,2W
3282 ©	4822 051 20684	680kΩ	5%	0,1W
3283 ©	4822 117 11139	1,5kΩ	1%	0,1W
3284 ©	4822 117 13579	220kΩ	1%	0.1W
3285 ©	4822 051 20154	150kΩ	5%	0,1W
3286 ©	4822 051 20684	680kΩ	5%	0,1W
3287 ©	4822 117 11139	1,5kΩ	1%	0,1W
3288 ©	4822 117 13579	220kΩ	1%	0.1W
3289 ©	4822 051 20154	150kΩ	5%	0,1W
3290 ©	4822 051 20101	100Ω	5%	0,1W
3291 ©	4822 117 10833	10kΩ	1%	0,1W
3293 ©	4822 051 20479	47Ω	5%	0,1W
3294 ©	4822 051 10102	1kΩ	2%	0,25W
3301	4822 116 83881	390Ω	5%	0,5W
3302	4822 116 83868	150Ω	5%	0,5W
3303	4822 116 83868	150Ω	5%	0,5W
3304 ©	4822 117 10833	10kΩ	1%	0,1W
3305 ©	4822 117 10833	10kΩ	1%	0,1W
3306 ©	4822 051 10102	1kΩ	2%	0,25W
3307	4822 116 83868	150Ω	5%	0,5W
3308 ©	4822 051 10102	1kΩ	2%	0,25W
3309 ©	4822 117 12955	2,7kΩ	1%	0,1W
3310 ©	4822 051 10102	1kΩ	2%	0,25W
3311 ©	4822 051 20479	47Ω	5%	0,1W
3312	4822 050 11002	1kΩ	5%	0,2W
3313	4822 050 11002	1kΩ	5%	0,2W
3314 ©	4822 117 10833	10kΩ	1%	0,1W
3315 ©	4822 117 10833	10kΩ	1%	0,1W
3316	4822 116 83868	150Ω	5%	0,5W
3317	4822 116 83872	220Ω	5%	0,5W
3318	4822 116 83876	270Ω	5%	0.16W
3319	4822 116 83881	390Ω	5%	0,5W
3320 ©	4822 117 11504	270Ω	1%	0.1W
3321	4822 116 52226	560Ω	5%	0,5W
3322	4822 116 83881	390Ω	5%	0,5W
3323	4822 116 52231	820Ω	5%	0,5W
3324	4822 116 52226	560Ω	5%	0,5W
3325	4822 116 52213	180Ω	5%	0,5W
3326	4822 116 52207	1,2kΩ	5%	0,5W
3327	4822 116 52231	820Ω	5%	0,5W
3328 ©	4822 117 10353	150Ω	5%	0,1W
3329	4822 116 52213	180Ω	5%	0,5W
3330	4822 116 52249	1,8kΩ	5%	0,16W
3331	4822 116 52207	1,2kΩ	5%	0,5W
3332 ©	4822 117 10353	150Ω	5%	0,1W
3333 ©	4822 051 20392	3,9kΩ	5%	0,1W
3334	4822 116 52249	1,8kΩ	5%	0,16W
3335	4822 116 52213	180Ω	5%	0,5W
3337	4822 050 21003	10kΩ	2%	0,25W
3338	4822 116 52276	3,9kΩ	5%	0,5W
3339	4822 116 52226	560Ω	5%	0,5W
3340	4822 050 21003	10kΩ	2%	0,25W
3341	4822 116 52219	330Ω	5%	0,5W
3342 ©	4822 051 20101	100Ω	5%	0,1W
3343 ©	4822 051 20109	10Ω	5%	0,1W
3344 ©	4822 051 20109	10Ω	5%	0,1W
3345	4822 052 10478	4,7Ω	5%	NFR

RESISTORS

3350	4822 116 83883	470Ω	5%	0,16W
3351 ©	4822 117 10833	10kΩ	1%	0,1W
3353 ©	4822 117 11148	56kΩ	1%	0,1W
3354 ©	4822 051 20399	39Ω	5%	0,1W
3356 ©	4822 117 11449	2,2kΩ	1%	0,1W
3357 ©	4822 051 20683	68kΩ	5%	0,1W
3358 ©	4822 117 10833	10kΩ	1%	0,1W
3359 ©	4822 117 11503	220Ω	5%	0,1W
3362 ©	4822 051 20471	470Ω	5%	0,1W
3364 ©	4822 051 20101	100Ω	5%	0,1W
3366 ©	4822 117 10837	100kΩ	1%	0,1W
3367 ©	4822 051 20829	82Ω	5%	0,1W
3368 ©	4822 051 20561	560Ω	5%	0,1W
3370 ©	4822 117 11507	6,8kΩ	1%	0,1W
3371 ©	4822 051 20472	4,7kΩ	5%	0,1W
3372 ©	4822 117 11449	2,2kΩ	1%	0,1W
3373 ©	4822 051 20223	22kΩ	5%	0,1W
3374 ©	4822 117 12955	2,7kΩ	1%	0,1W
3375 ©	4822 051 10102	1kΩ	2%	0,25W
3376 ©	4822 117 11449	2,2kΩ	1%	0,1W
3377 ©	4822 051 20105	1MΩ	5%	0,1W
3378 ©	4822 051 20105	1MΩ	5%	0,1W
3379 ©	4822 117 12955	2,7kΩ	1%	0,1W
3380 ©	4822 117 10833	10kΩ	1%	0,1W
3381 ©	4822 051 20229	22Ω	5%	0,1W
3382 ©	4822 117 11448	180Ω	10%	0,1W
3383	4822 101 21204	POTMETER, 20k		
3384 ©	4822 051 10102	1kΩ	2%	0,25W
3385 ©	4822 117 10833	10kΩ	1%	0,1W
3386 ©	4822 051 20339	33Ω	5%	0,1W
3387 ©	4822 117 11449	2,2kΩ	1%	0,1W
3388	4822 116 83883	470Ω	5%	0,16W
3389	4822 116 83883	470Ω	5%	0,16W
3390 ©	4822 051 10102	1kΩ	2%	0,25W
3391 ©	4822 117 10833	10kΩ	1%	0,1W
3392 ©	4822 051 20105	1MΩ	5%	0,1W
3393 ©	4822 051 20472	4,7kΩ	5%	0,1W
3394 ©	4822 117 10834	47kΩ	1%	0,1W
3395 ©	4822 117 10353	150Ω	5%	0,1W
3396 ©	4822 117 13579	220kΩ	1%	0.1W
3397 ©	4822 051 20471	470Ω	5%	0,1W
3401 ©	4822 117 12955	2,7kΩ	1%	0,1W
3403 ©	4822 051 10102	1kΩ	2%	0,25W
3404 ©	4822 051 20479	47Ω	5%	0,1W
3407 ©	4822 117 10833	10kΩ	1%	0,1W
3501 ©	4822 117 11139	1,5kΩ	1%	0,1W
3502 ©	4822 117 11139	1,5kΩ	1%	0,1W
3503 ©	4822 051 20471	470Ω	5%	0,1W
3504 ©	4822 051 20101	100Ω	5%	0,1W
3505 ©	4822 117 11139	1,5kΩ	1%	0,1W
3506 ©	4822 117 11139	1,5kΩ	1%	0,1W
3507 ©	4822 051 20471	470Ω	5%	0,1W
3508 ©	4822 051 20101	100Ω	5%	0,1W
4001 ©	4822 051 20008	CHIP JUMPER 0805		
4002 ©	4822 051 20008	CHIP JUMPER 0805		
4004 ©	4822 051 20008	CHIP JUMPER 0805		
4005 ©	4822 051 20008	CHIP JUMPER 0805		
4006 ©	4822 051 20008	CHIP JUMPER 0805		
4007 ©	4822 051 20008	CHIP JUMPER 0805		
4008 ©	4822 051 20008	CHIP JUMPER 0805		

ELECTRICAL PARTSLIST FRONT BOARD

RESISTORS

4009 ©	4822 051 20008	CHIP JUMPER 0805
4012 ©	4822 051 20008	CHIP JUMPER 0805
4013 ©	4822 051 20008	CHIP JUMPER 0805
4014 ©	4822 051 20008	CHIP JUMPER 0805
4015 ©	4822 051 20008	CHIP JUMPER 0805
4016 ©	4822 051 20008	CHIP JUMPER 0805
4017 ©	4822 051 20008	CHIP JUMPER 0805
4018 ©	4822 051 20008	CHIP JUMPER 0805
4019 ©	4822 051 20008	CHIP JUMPER 0805
4021 ©	4822 051 20008	CHIP JUMPER 0805
4022 ©	4822 051 20008	CHIP JUMPER 0805
4024 ©	4822 051 20008	CHIP JUMPER 0805
4025 ©	4822 051 20008	CHIP JUMPER 0805
4026 ©	4822 051 20008	CHIP JUMPER 0805
4027 ©	4822 051 20008	CHIP JUMPER 0805
4028 ©	4822 051 20008	CHIP JUMPER 0805
4029 ©	4822 051 20008	CHIP JUMPER 0805
4030 ©	4822 051 20008	CHIP JUMPER 0805
4031 ©	4822 051 20008	CHIP JUMPER 0805
4032 ©	4822 051 20008	CHIP JUMPER 0805
4033 ©	4822 051 20008	CHIP JUMPER 0805
4034 ©	4822 051 20008	CHIP JUMPER 0805
4035 ©	4822 051 20008	CHIP JUMPER 0805
4036 ©	4822 051 20008	CHIP JUMPER 0805
4037 ©	4822 051 20008	CHIP JUMPER 0805
4038 ©	4822 051 20008	CHIP JUMPER 0805
4039 ©	4822 051 20008	CHIP JUMPER 0805
4040 ©	4822 051 20008	CHIP JUMPER 0805
4041 ©	4822 051 20008	CHIP JUMPER 0805
4042 ©	4822 051 20008	CHIP JUMPER 0805
4043 ©	4822 051 20008	CHIP JUMPER 0805
4044 ©	4822 051 20008	CHIP JUMPER 0805
4045 ©	4822 051 20008	CHIP JUMPER 0805
4046 ©	4822 051 20008	CHIP JUMPER 0805
4047 ©	4822 051 20008	CHIP JUMPER 0805
4048 ©	4822 051 20008	CHIP JUMPER 0805
4049 ©	4822 051 20008	CHIP JUMPER 0805
4050 ©	4822 051 20008	CHIP JUMPER 0805
4051 ©	4822 051 20008	CHIP JUMPER 0805
4052 ©	4822 051 20008	CHIP JUMPER 0805
4053 ©	4822 051 20008	CHIP JUMPER 0805
4054 ©	4822 051 20008	CHIP JUMPER 0805
4055 ©	4822 051 20008	CHIP JUMPER 0805
4056 ©	4822 051 20008	CHIP JUMPER 0805
4057 ©	4822 051 20008	CHIP JUMPER 0805
4058 ©	4822 051 20008	CHIP JUMPER 0805
4059 ©	4822 051 20008	CHIP JUMPER 0805
4060 ©	4822 051 20008	CHIP JUMPER 0805
4061 ©	4822 051 20008	CHIP JUMPER 0805
4102 ©	4822 051 20008	CHIP JUMPER 0805
4103 ©	4822 051 20008	CHIP JUMPER 0805
4104 ©	4822 051 20008	CHIP JUMPER 0805
4105 ©	4822 051 20008	CHIP JUMPER 0805
4106 ©	4822 051 20008	CHIP JUMPER 0805
4107 ©	4822 051 20008	CHIP JUMPER 0805
4108 ©	4822 051 20008	CHIP JUMPER 0805
4109 ©	4822 051 20008	CHIP JUMPER 0805
4110 ©	4822 051 20008	CHIP JUMPER 0805
4111 ©	4822 051 20008	CHIP JUMPER 0805
4112 ©	4822 051 20008	CHIP JUMPER 0805

RESISTORS

4201 ©	4822 051 20008	CHIP JUMPER 0805
4203 ©	4822 051 20008	CHIP JUMPER 0805
4204 ©	4822 051 20008	CHIP JUMPER 0805
4205 ©	4822 051 20008	CHIP JUMPER 0805
4206 ©	4822 051 20008	CHIP JUMPER 0805
4304 ©	4822 051 20008	CHIP JUMPER 0805
4401 ©	4822 051 20008	CHIP JUMPER 0805
4501 ©	4822 051 20008	CHIP JUMPER 0805

COILS

1107	4822 242 70938	CRYSTAL 32,768kHz
1108	5322 242 73686	CERAMIC RESONATOR, 12MHZ
1111	4822 242 72195	XTAL 4,332MHz
5101	4822 156 21721	2,2µH
5102	4822 156 21721	2,2µH
5103	4822 156 21721	2,2µH
5104	4822 156 21721	2,2µH
5107	4822 156 21721	2,2µH
5108	4822 156 21721	2,2µH
5109	4822 156 21721	2,2µH
5110	4822 156 21721	2,2µH
5111	4822 156 21721	2,2µH
5112	4822 156 21721	2,2µH
5130	2422 536 00019	TRANSFORMER, DIGITAL OUT

DIODES

6101	4822 130 11589	LED, LTL-1CHAE
6102	4822 130 11589	LED, LTL-1CHAE
6103	4822 130 11589	LED, LTL-1CHAE
6104	4822 130 11589	LED, LTL-1CHAE
6105	9322 131 65675	LED, LTL-1CHEE
6106	4822 130 11589	LED, LTL-1CHAE
6107	4822 130 11589	LED, LTL-1CHAE
6108	4822 130 30621	1N4148
6109	4822 130 30621	1N4148
6110	4822 130 30621	1N4148
6120	4822 130 30621	1N4148
6121	4822 130 30621	1N4148
6122	4822 130 30621	1N4148
6123	4822 130 30621	1N4148
6124	4822 130 30621	1N4148
6130	4822 130 11589	LED, LTL-1CHAE
6131	4822 130 11589	LED, LTL-1CHAE
6132	4822 130 30621	1N4148
6133	4822 130 11589	LED, LTL-1CHAE
6134	4822 130 11589	LED, LTL-1CHAE
6135	8203 303 84440	LED 5MM BLUE
6136	8203 303 84850	LED, LTL2R3KFK-071A
6137	4822 130 11589	LED, LTL-1CHAE
6138	4822 130 11589	LED, LTL-1CHAE
6139	4822 130 11589	LED, LTL-1CHAE
6140	8203 303 84850	LED, LTL2R3KFK-071A
6142	8203 303 84450	LED 5MM AMBER/H.E.RED
6143	4822 130 11589	LED, LTL-1CHAE
6160	4822 130 30621	1N4148
6161	4822 130 30621	1N4148
6162	4822 130 30621	1N4148
6170	8203 303 84430	LED 5MM 90 DEGREE BLUE
6200	5322 130 30691	BAW56
6201	5322 130 30691	BAW56
6202	5322 130 30691	BAW56

ELECTRICAL PARTSLIST FRONT BOARD

DIODES

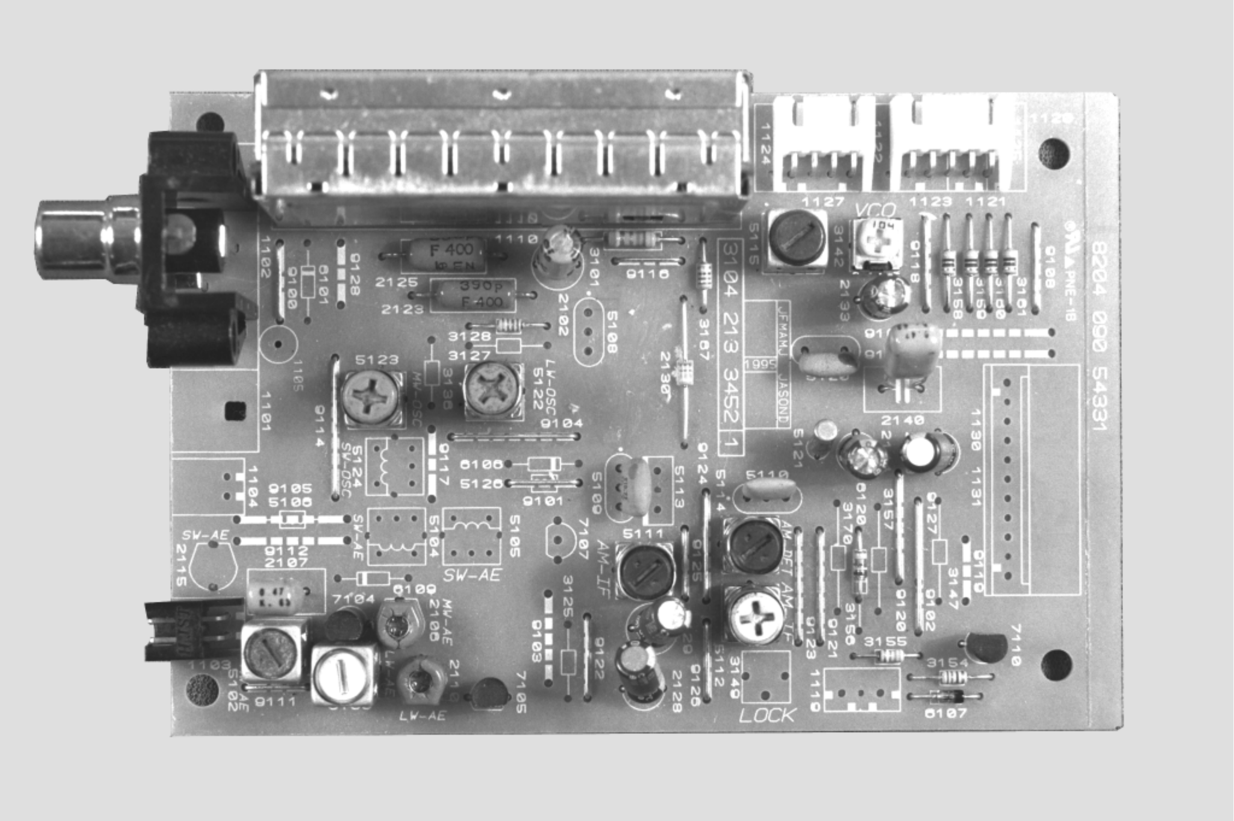
6203	5322 130 30691	BAW56
6205	5322 130 30691	BAW56
6206	5322 130 30691	BAW56
6207	5322 130 30691	BAW56
6208	5322 130 30691	BAW56
6209	5322 130 30691	BAW56
6210	5322 130 30691	BAW56
6211	5322 130 30691	BAW56

TRANSISTORS

7101 ©	4822 130 60511	BC847B
7102 ©	4822 130 60511	BC847B
7103 ©	4822 130 60511	BC847B
7104 ©	4822 130 60511	BC847B
7105 ©	4822 130 60511	BC847B
7106 ©	4822 130 60511	BC847B
7111 ©	4822 130 60511	BC847B
7123 ©	4822 130 60511	BC847B
7131 ©	4822 130 60511	BC847B
7150 ©	4822 130 42804	BC817-25
7151 ©	4822 130 60511	BC847B
7152 ©	4822 130 60373	BC856B
7153 ©	4822 130 60511	BC847B
7154 ©	4822 130 42804	BC817-25
7155 ©	4822 130 60511	BC847B
7156 ©	4822 130 60511	BC847B
7160 ©	4822 130 60511	BC847B

INTEGRATED CIRCUITS

7107 ©	4822 209 15449	74HC4094D, SHIFT REGISTER
7108 ©	8203 303 90210	TMP88CU77ZF, µP
7110 ©	9322 131 04668	M24C01, EEPROM
7112	9322 137 14667	IR RECEIVER TSOP2836ZC1
7120 ©	4822 209 17345	M62320FP, I2C SHIFT REGISTER
7121	4822 209 31981	SAA6579T/V1, RDS DECODER
7122 ©	5322 209 11446	HEF4051BT, MULTIPLEXER
7130 ©	4822 209 15449	74HC4094D, SHIFT REGISTER
7132 ©	4822 209 15449	74HC4094D, SHIFT REGISTER
7140 ©	4822 209 17235	74LVU04D, 6-FOLD INVERTER
7142	4822 209 10263	HEF4052BP, SELECTOR IC
7145	4822 209 10263	HEF4052BP, SELECTOR IC



Tuner 95

(3 Band RDS Tuner)

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Component Layout...7A-5
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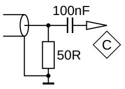
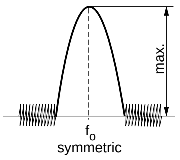
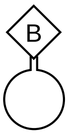
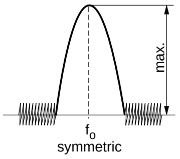
TUNER ADJUSTMENT TABLE (**TUNER 95** FM/MW/LW - version with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check	6	7...9V
			87.5MHz	check		1.3...2V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8.3V ±0.2V
			531kHz	check		1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8.3V ±0.2V
			153kHz	check		1V ±0.4V
FM - IF						
FM	98MHz 1mV continuous wave **shortcircuit pin 21 of IC7108 to ground**	A	98MHz	5107	1 2	0mV ±3mV
FM - VCO						
FM	98MHz 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz 1)
DISTORTION						
FM	98MHz 1mV 90% Left + 9% pilot mod=1kHz	A	98MHz	mixcoil inside tuner 1110	4	min. distortion
AM IF						
MW	450kHz Δf=10kHz as low as possible	 C	MW	5111	7	
				5112		
	450kHz continuous wave			5114	1 2	0mV ±2mV
AM RF 2)						
MW	558kHz	 Δf = ±30kHz V_{RF} as low as possible	558kHz	5102	7	
	1494kHz		1494kHz	2106		
LW	198kHz		198kHz	5103		

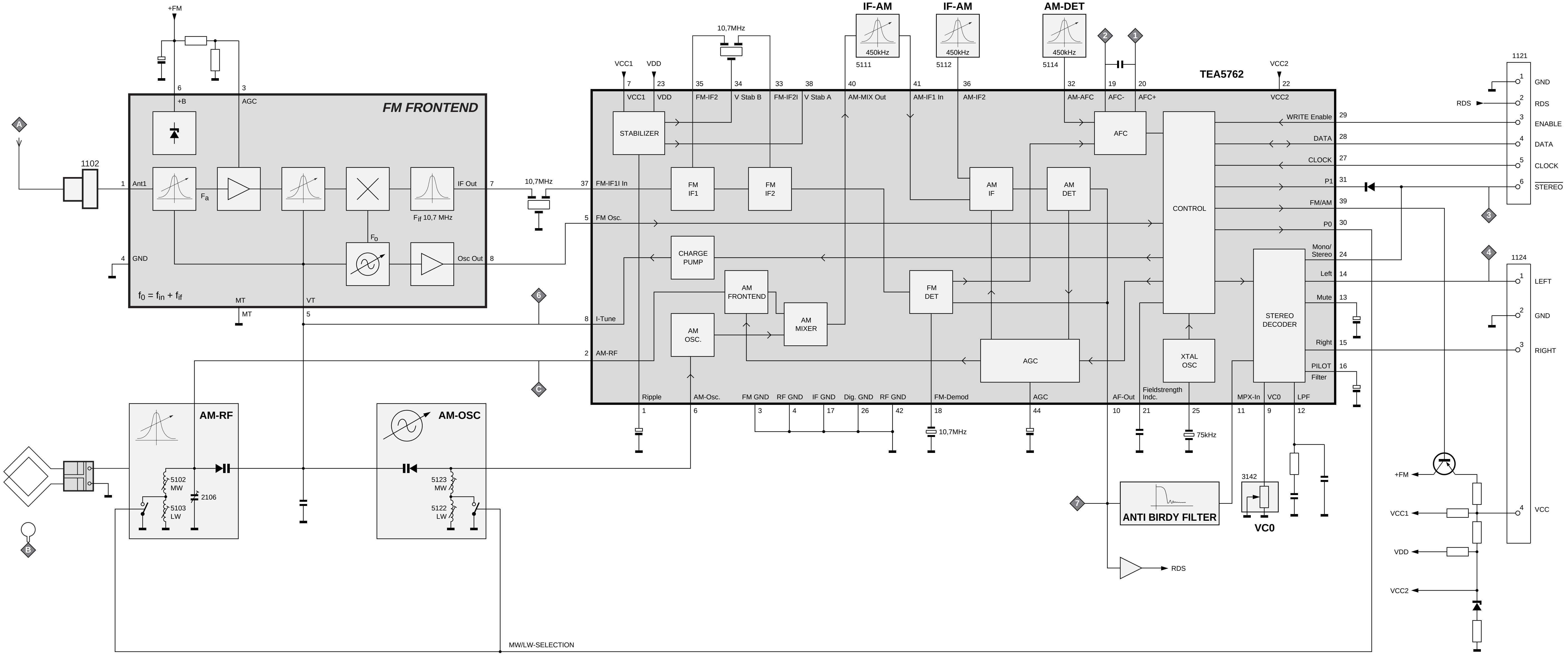
---

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) For AM RF adjustments the original frame antenna has to be used !

↕ Repeat

BLOCK DIAGRAM TUNER95


+FM
6
+B
3
AGC
FM FRONTEND
A
1102
1
Ant1
Fa
IF Out
7
Fif 10,7 MHz
F0
Osc Out
8
4
GND
f0 = fin + fif
MT
VT
MT
5
10,7MHz
10,7MHz
6
C
IF-AM
450kHz
5111
IF-AM
450kHz
5112
AM-DET
450kHz
5114
2
1
TEA5762
VCC1
VDD
VCC2
7
23
35
34
33
38
40
41
36
32
19
20
22
VCC1
VDD
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
VCC2
STABILIZER
AFC
CONTROL
37
FM-IF1I In
5
FM Osc.
8
I-Tune
2
AM-RF
FM IF1
FM IF2
AM IF
AM DET
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
FM DET
AGC
XTAL OSC
STEREO DECODER
WRITE Enable 29
DATA 28
CLOCK 27
P1 31
FM/AM 39
P0 30
Mono/ Stereo 24
Left 14
Mute 13
Right 15
PILOT Filter 16
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VC0
LPF
1
6
3
4
17
26
42
18
44
10
21
25
11
9
12
10,7MHz
75kHz
1121
GND
RDS
ENABLE
DATA
CLOCK
STEREO
RDS
1
2
3
4
5
6
3
4
1124
LEFT
GND
RIGHT
VCC
1
2
3
4
AM-RF
5102 MW
5103 LW
2106
AM-OSC
5123 MW
5122 LW
B
7
ANTI BIRDY FILTER
3142
VC0
RDS
+FM
VCC1
VDD
VCC2
MW/LW-SELECTION

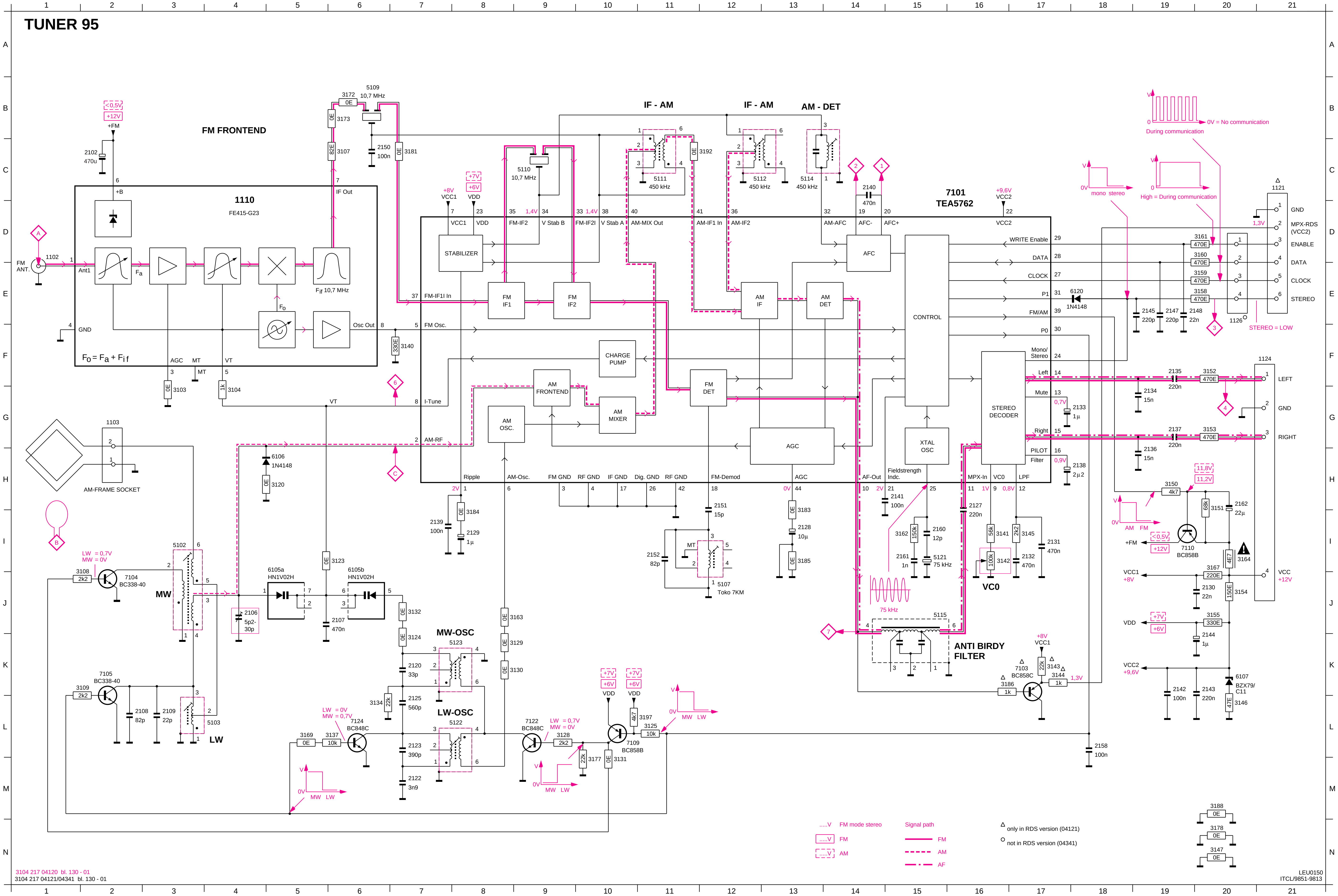
1102	D1	1124	F21	2107	J6	2122	M7	2128	I13	2132	I17	2136	H19	2140	C14
1103	G2	1126	E20	2108	L2	2123	L7	2129	I8	2133	G18	2137	G19	2141	H15
1110	D4	2102	C2	2109	L3	2125	L7	2130	J20	2134	G19	2138	H18	2142	K19
1121	C21	2106	J4	2120	K7	2127	H16	2131	I17	2135	F19	2139	I7	2143	K20

2144	K20	2150	C6	2160	I15	3104	G4	3120	H5	3128	L9	3132	J7	3141	I16
2145	E19	2151	H12	2161	I15	3107	C6	3123	I6	3129	K8	3134	L6	3142	I16
2147	E19	2152	I11	2162	H20	3108	J1	3124	K7	3130	K8	3137	L5	3143	K17
2148	E19	2158	L18	3103	G3	3109	K1	3125	L11	3131	M10	3140	F7	3144	K17

3145	I17	3151	I20	3155	J20	3161	D19	3167	I20	3177	M10	3184	I8	3192	C12
3146	L20	3152	F20	3158	E19	3162	I15	3169	L5	3178	N20	3185	I13	3197	L11
3147	N20	3153	G20	3159	E19	3163	J8	3172	B6	3181	C7	3186	K16	5102	I3
3150	H19	3154	J20	3160	D19	3164	I20	3173	B6	3183	I13	3188	M20	5103	L4

5107	J12	5112	C12	5122	L7	6106	H5	7103	K17	7110	I19				
5109	B6	5114	C13	5123	K7	6107	K20	7104	J2	7122	L9				
5110	C9	5115	J15	6105a	I5	6120	E17	7105	K2	7124	L6				
5111	C11	5121	I15	6105b	I6	7101	C15	7109	L10						

TUNER 95



FM FRONTEND
1110
FE415-G23
IF Out
+B
FM ANT.
1102
Ant1
Fa
Fif 10,7 MHz
Fo
Osc Out
GND
Fo = Fa + Fif
AGC
MT
VT
3103
3104
1k
<0,5V
+12V
+FM
2102
470µ
3172
0E
5109
10,7 MHz
3173
3107
82E
2150
100n
3181
3140
330E
IF - AM
IF - AM
AM - DET
5110
10,7 MHz
5111
450 kHz
5112
450 kHz
5114
450 kHz
3192
2140
470n
7101
TEA5762
+8V
VCC1
+7V
+6V
VDD
+9,6V
VCC2
1,4V
STABILIZER
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
FM-IF1 In
FM Osc.
I-Tune
AM-RF
FM IF1
FM IF2
AM IF
AM DET
AFC
CONTROL
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
FM DET
AGC
XTAL OSC
STEREO DECODER
WRITE Enable
DATA
CLOCK
P1
FM/AM
P0
Mono/Stereo
Left
Mute
Right
PILOT
Filter
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
6120
1N4148
3161 470E
3160 470E
3159 470E
3158 470E
2145 220p
2147 220p
2148 22n
1126
1121
GND
MPX-RDS (VCC2)
ENABLE
DATA
CLOCK
STEREO
STEREO = LOW
0V = No communication
During communication
mono stereo
High = During communication
1124
LEFT
GND
RIGHT
2135 220n
3152 470E
2134 15n
2133 1µ
2137 220n
3153 470E
2136 15n
2138 2µ2
0,7V
0,9V
11,8V
11,2V
3150 4k7
3151 68k
2162 22µ
7110 BC858B
3164 4E7
+FM
<0,5V
+12V
AM FM
VCC1 +8V
3167 220E
2130 22n
3154 150E
VCC +12V
VDD
+7V
+6V
3155 330E
2144 1µ
VCC2 +9,6V
2142 100n
2143 220n
6107 BZX79/C11
3146 47E
2158 100n
7103 BC858C
3186 1k
3143 22k
3144 1k
1,3V
+8V VCC1
ANTI BIRDY FILTER
5115
75 kHz
VCO
3141 56k
3142 100k
3145 2k2
2131 470n
2132 470n
2127 220n
2141 100n
3162 150k
2160 12p
2161 1n
5121 75 kHz
2V
1V
0,8V
3183 0E
2128 10µ
3185 0E
2151 15p
2152 82p
MT
5107
Toko 7KM
2139 100n
3184 0E
2129 1µ
6106
1N4148
3120 0E
1103
AM-FRAME SOCKET
VT
LW = 0,7V
MW = 0V
3108 2k2
7104 BC338-40
5102
MW
2106 5p2-30p
6105a HN1V02H
6105b HN1V02H
3123 0E
2107 470n
3132 0E
3124 0E
3163 0E
3129 0E
3130 0E
MW-OSC
5123
2120 33p
2125 560p
3134 22k
LW-OSC
5122
2123 390p
2122 3n9
7105 BC338-40
3109 2k2
2108 82p
2109 22p
5103
LW
3169 0E
3137 10k
7124 BC848C
LW = 0V
MW = 0,7V
MW LW
7122 BC848C
LW = 0,7V
MW = 0V
3128 2k2
3177 22k
3131 0E
7109 BC858B
3197 4k7
3125 10k
+7V
+6V
VDD
....V FM mode stereo
....V FM
....V AM
Signal path
FM
AM
AF
only in RDS version (04121)
not in RDS version (04341)
3188 0E
3178 0E
3147 0E
A B C D E F G H I J K L M N
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

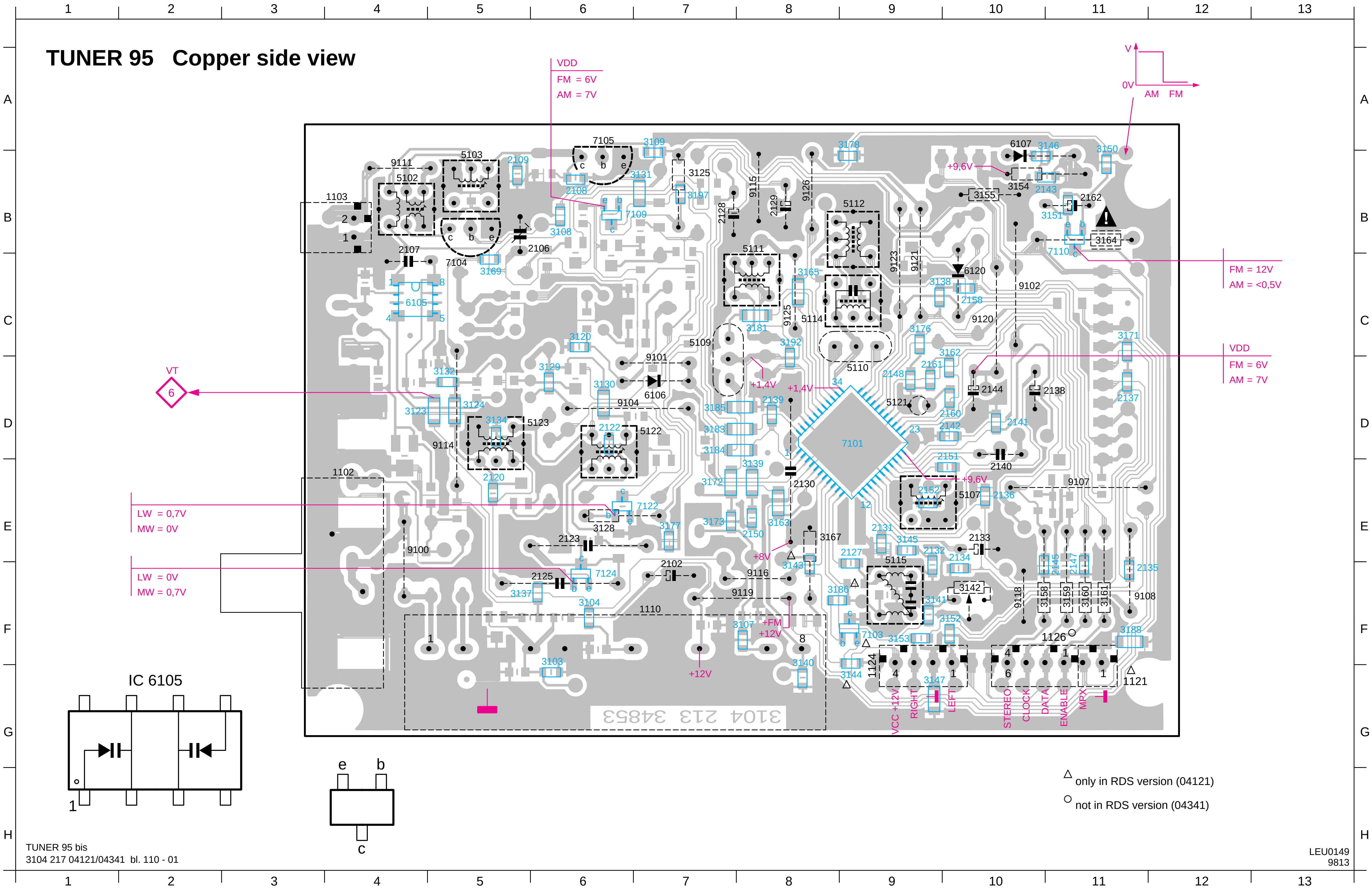
3104 217 04120 bl. 130 - 01
3104 217 04121/04341 bl. 130 - 01

LEU0150
ITCL/9851-9813

7A-5 7A-5

1102	E4	2107	B4	2128	B7	2136	F10	2144	D10	2160	D9	3120	C6	3132	D5	3143	F8	3153	F9	3163	E8	3176	C9	3188	F11	5111	B8	6106	D7	7110	C11	9108	F11	9121	C9
1103	B4	2108	B6	2129	B8	2137	D11	2145	F11	2161	D9	3123	D4	3134	D5	3144	G9	3154	B10	3164	B11	3177	E7	3192	C8	5112	B9	6107	A10	7122	E7	9111	B4	9123	C9
1110	F7	2109	B5	2130	E8	2138	D10	2147	F11	2162	B11	3124	D5	3137	F5	3145	E9	3155	B10	3165	C8	3178	A8	3197	B7	5114	C8	6120	C10	7124	F6	9114	D5	9125	C8
1121	G11	2120	E5	2131	E9	2139	D8	2148	D9	3103	G6	3125	B7	3138	C9	3146	A10	3158	F11	3167	E8	3181	C8	5102	B4	5115	F9	7101	D9	9100	E4	9115	B8	9126	B8
1124	G9	2122	D6	2132	E9	2140	E10	2150	E8	3104	F6	3128	E6	3139	E8	3147	G9	3159	F11	3169	C5	3183	D7	5103	B5	5121	D9	7103	F9	9101	D7	9116	F8		
1126	F10	2123	E6	2133	E10	2141	D10	2151	E9	3107	F7	3129	D6	3140	G8	3150	B11	3160	F11	3171	C11	3184	D7	5107	E10	5122	D7	7104	C5	9102	C10	9118	F10		
2102	F7	2125	F6	2134	F10	2142	D9	2152	E9	3108	B6	3130	D6	3141	F9	3151	B10	3161	F11	3172	E7	3185	D7	5109	C7	5123	D5	7105	A6	9104	D6	9119	F7		
2106	B5	2127	E9	2135	F11	2143	B10	2158	C10	3109	A7	3131	B6	3142	F10	3152	F9	3162	C9	3173	E7	3186	F8	5110	D9	6105	C4	7109	B6	9107	E11	9120	C10		

TUNER 95 Copper side view


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
VDD
FM = 6V
AM = 7V
V
0V
AM
FM
FM = 12V
AM = <0,5V
VDD
FM = 6V
AM = 7V
VT
6
LW = 0,7V
MW = 0V
LW = 0V
MW = 0,7V
+9,6V
+1,4V
+1,4V
+9,6V
+8V
+FM
+12V
+12V
7101
6105
VCC +12V
RIGHT
LEFT
STEREO
CLOCK
DATA
ENABLE
MPX
3104 213 34853
IC 6105
1
e
b
c

△ only in RDS version (04121)

○ not in RDS version (04341)

ELECTRICAL PARTSLIST TUNER 95

MISCELLANEOUS

1102	4822 267 10283	SOCKET COAX, IEC 75Ω
1103	4822 265 31184	JST CONNECTOR 2 POLE
1110	4822 210 10492	FRONTEND ASSY /02/08
1110	4822 210 10739	FM-FRONTEND FE415-G23

CAPACITORS

2102	4822 124 80791	470µF	20%	16V
2106	4822 125 60102	30pF TRIMCAP		
2107	4822 121 51252	470nF	5%	63V
2108 ©	4822 126 13695	82pF	1%	63V
2109 ©	5322 122 32658	22pF	5%	50V
2120 ©	5322 122 32659	33pF	5%	50V
2122 ©	5322 126 10465	3,9nF	10%	63V
2123	4822 121 10766	390pF	1%	630V
2125	4822 121 10578	560pF	1%	630V
2127 ©	4822 122 32927	220nF	10%	63V
2128	4822 124 41579	10µF	20%	50V
2129	4822 124 40242	1µF	20%	63V
2130	4822 126 11585	22nF	20%	50V
2131 ©	4822 122 33325	470nF	20%	50V
2132 ©	4822 122 33325	470nF	20%	50V
2133	4822 124 40242	1µF	20%	63V
2134 ©	4822 126 13188	15nF	5%	63V
2135 ©	4822 122 32927	220nF	10%	63V
2136 ©	4822 126 13188	15nF	5%	63V
2137 ©	4822 122 32927	220nF	10%	63V
2138	4822 124 41576	2,2µF	20%	50V
2140	4822 121 51252	470nF	5%	63V
2141 ©	4822 122 31947	100nF	20%	50V
2142 ©	4822 122 31947	100nF	20%	50V
2143 ©	4822 122 32927	220nF	10%	63V
2144	4822 124 40242	1µF	20%	63V
2145 ©	4822 122 33575	220pF	5%	50V
2147 ©	4822 122 33575	220pF	5%	50V
2148 ©	4822 122 33575	220pF	5%	50V
2150 ©	4822 122 31947	100nF	20%	50V
2158 ©	4822 122 31947	100nF	20%	50V
2160 ©	4822 122 32139	12pF	5%	63V
2161 ©	5322 122 34123	1nF	10%	50V
2162	4822 124 81151	22µF	20%	50V

RESISTORS

3090	4822 116 52206	120Ω	5%	0,5W
3091	4822 116 52206	120Ω	5%	0,5W
3092	4822 116 52219	330Ω	5%	0,5W
3102 ©	4822 117 13579	220kΩ	1%	0.1W
3103 ©	4822 051 20184	180kΩ	5%	0,1W
3104 ©	4822 051 10102	1kΩ	2%	0,25W
3107 ©	4822 051 20829	82Ω	5%	0,1W
3108 ©	4822 117 11449	2,2kΩ	1%	0,1W
3109 ©	4822 117 11449	2,2kΩ	1%	0,1W
3120 ©	4822 051 20008	CHIP JUMPER 0805		
3123 ©	4822 051 10008	CHIP JUMPER 1206		
3124 ©	4822 051 10008	CHIP JUMPER 1206		
3125	4822 116 83864	10kΩ	5%	0,5W
3128	4822 116 52256	2,2kΩ	5%	0,16W
3129 ©	4822 051 20008	CHIP JUMPER 0805		
3130 ©	4822 051 10008	CHIP JUMPER 1206		
3131 ©	4822 051 10008	CHIP JUMPER 1206		
3132 ©	4822 051 20008	CHIP JUMPER 0805		
3134 ©	4822 051 20223	22kΩ	5%	0,1W
3137 ©	4822 117 10833	10kΩ	1%	0,1W
3140 ©	4822 051 20331	330Ω	5%	0,1W
3141 ©	4822 117 11148	56kΩ	1%	0,1W
3142	4822 100 11163	100kΩ TRIMPOT LIN.		
3143 ©	4822 051 20223	22kΩ	5%	0,1W
3144 ©	4822 051 10102	1kΩ	2%	0,25W
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W
3146 ©	4822 051 20479	47Ω	5%	0,1W
3150 ©	4822 051 20472	4,7kΩ	5%	0,1W
3151 ©	4822 051 20683	68kΩ	5%	0,1W
3152 ©	4822 051 20471	470Ω	5%	0,1W
3153 ©	4822 051 20471	470Ω	5%	0,1W
3154	4822 116 83868	150Ω	5%	0,5W
3155	4822 116 52219	330Ω	5%	0,5W
3158	4822 116 83883	470Ω	5%	0,16W
3159	4822 116 83883	470Ω	5%	0,16W
3160	4822 116 83883	470Ω	5%	0,16W
3161	4822 116 83883	470Ω	5%	0,16W
3162 ©	4822 117 13579	220kΩ	1%	0.1W
3163 ©	4822 051 10008	CHIP JUMPER 1206		
3164	4822 052 10478	4,7Ω	5%	NFR
3167	4822 116 83872	220Ω	5%	0,5W
3169 ©	4822 051 20008	CHIP JUMPER 0805		
3172 ©	4822 051 10008	CHIP JUMPER 1206		
3181 ©	4822 051 10008	CHIP JUMPER 1206		
3183 ©	4822 051 10008	CHIP JUMPER 1206		
3184 ©	4822 051 10008	CHIP JUMPER 1206		
3185 ©	4822 051 10008	CHIP JUMPER 1206		
3186 ©	4822 051 10102	1kΩ	2%	0,25W
3188 ©	4822 051 10008	CHIP JUMPER 1206		
3191 ©	4822 117 10353	150Ω	5%	0,1W
3192 ©	4822 051 20008	CHIP JUMPER 0805		
3197 ©	4822 051 20472	4,7kΩ	5%	0,1W

COILS

5102	4822 157 71634	RF-COIL MW
5103	4822 157 71635	RF-COIL LW
5109	4822 157 71639	FM-IF FILTER 10,7MHz
5110	4822 242 70665	FM-IF FILTER 10,7MHz
5111	4822 158 60511	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz
5114	4822 157 70302	AM-IF FILTER 450kHz
5115	4822 157 71636	ANTI BIRDY FILTER
5120	4822 242 10251	CER. DISCR. 10.7MG61KA-TF21
5121	4822 242 10261	QUARTZ 75kHz
5122	4822 157 60517	RF-COIL AM
5123	4822 157 60517	RF-COIL AM

DIODES

6105 ©	4822 130 83075	HN1V02H
6106	4822 130 30621	1N4148
6107	4822 130 34488	BZX79-C11
6120	4822 130 30621	1N4148

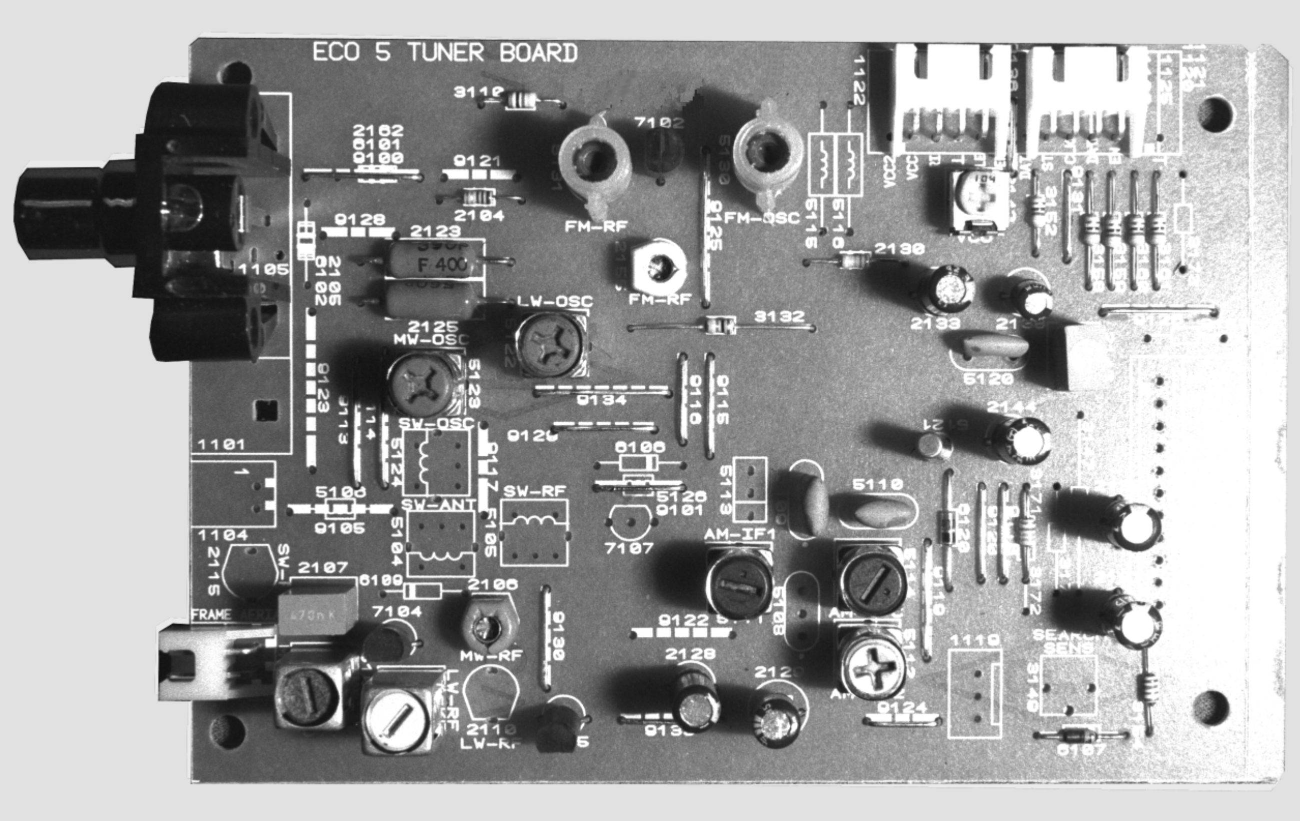
TRANSISTORS

7103 ©	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109 ©	5322 130 41983	BC858B
7110 ©	5322 130 41983	BC858B
7122 ©	5322 130 42136	BC848C
7124 ©	5322 130 42136	BC848C

ELECTRICAL PARTSLIST TUNER 95

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC


ECO 5 TUNER BOARD
3110
2102
6101
9100
9121
2104
7102
FM-RF
FM-OSC
5115
5116
1122
VCC
9128
2123
F 400
1105
LW-OSC
2125
MW-OSC
2130
3132
2133
6120
5123
9123
9134
9116
9115
SW-OSC
2144
9126
6106
5113
5110
1101
SW-ANT
SW-RF
5126
9101
5100
9105
5104
5105
7107
AM-IF1
1104
2115
2107
6109
2106
7104
FRAME
470nK
MW-RF
9130
9122
2128
9120
1110
SEARCH SENS
9124
6107
2110
LW-RF

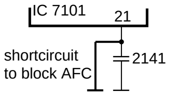
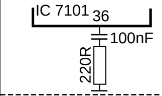
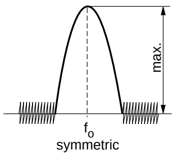
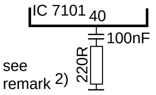
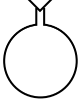
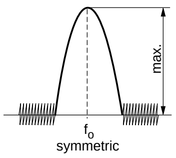
Tuner ECO 5

(3 Band Tuner)

TABLE OF CONTENTS

Adjustment table 7B-2
Blockdiagram 7B-3
Circuit Diagram 7B-4
Component Layout...7B-5
Electrical Partslist...7B-6

TUNER ADJUSTMENT TABLE (**ECO5** FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F		5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX ↕
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz 1)
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C Δf=±15kHz V_{RF} = 3mV		5111	4	
				5112		
AM AFC **MW**		C continuous wave V_{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF 3)						
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B 	1494kHz	2106	4	 ↕
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V_{RF} as low as possible	1500kHz	2106		↕
	560kHz		560kHz	5102		

ECO5, discr. coil, 090797

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

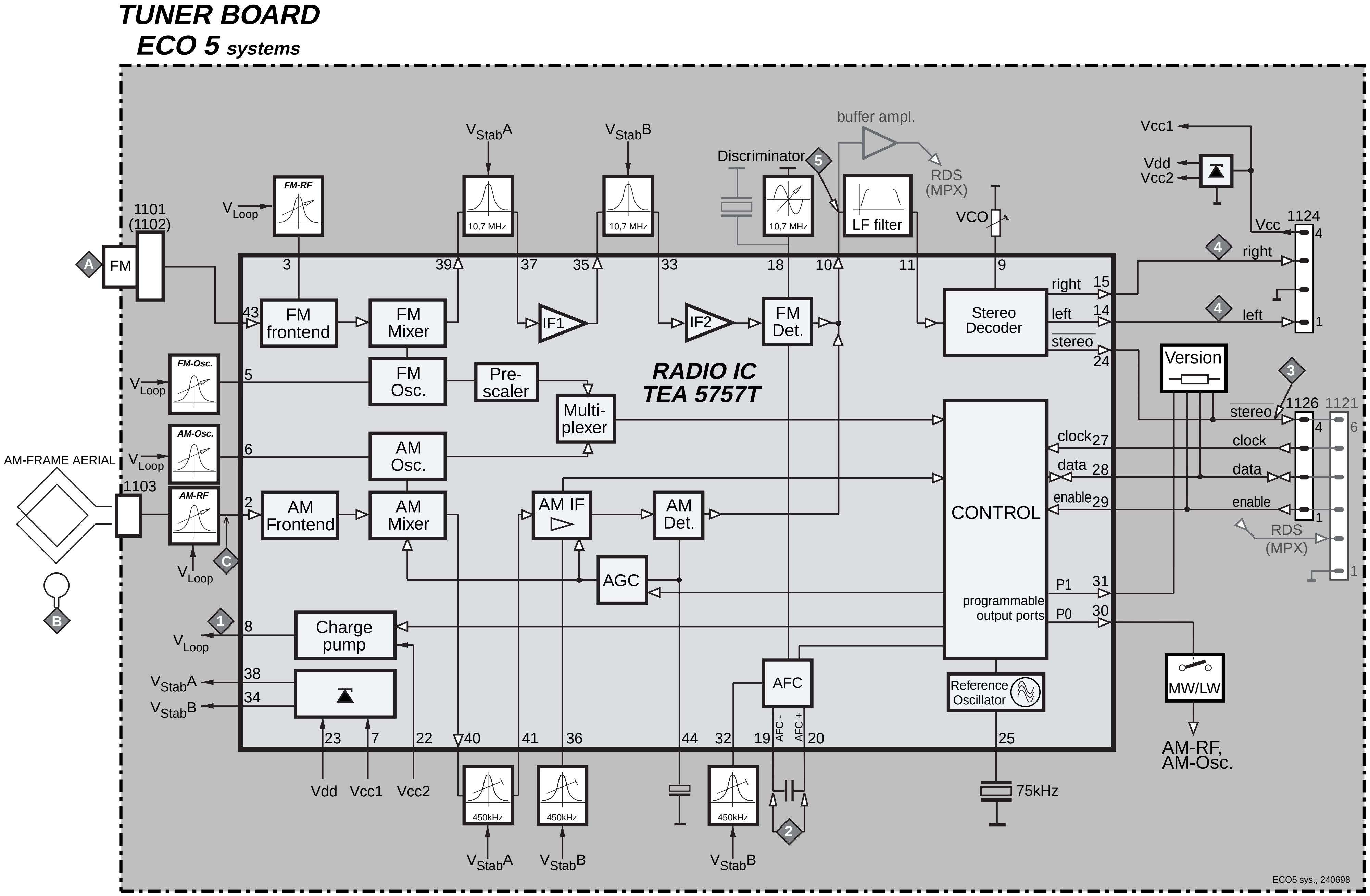
2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used !

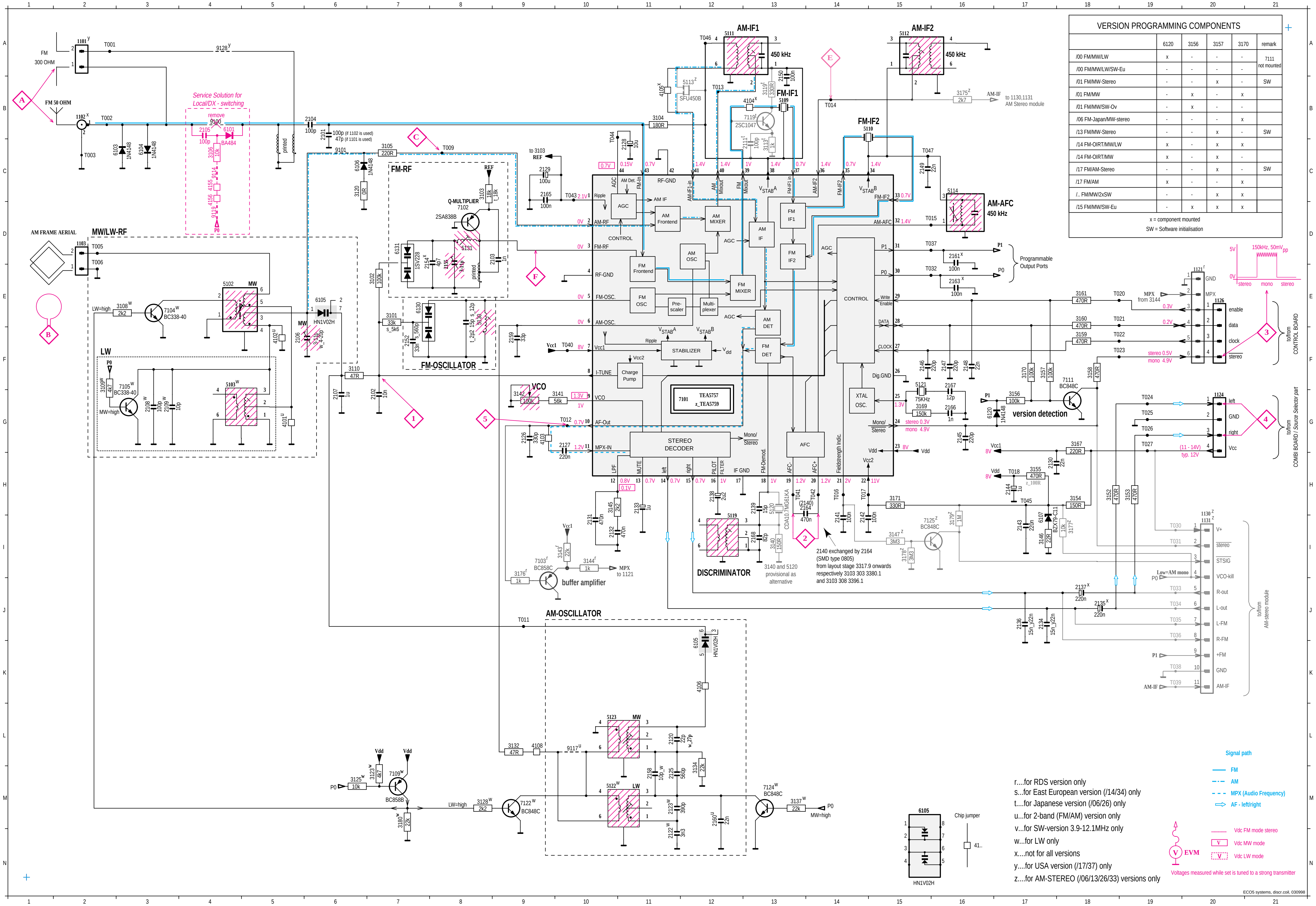
4) MW has to be aligned before LW.

↕ Repeat

BLOCK DIAGRAM TUNER ECO5


TUNER BOARD
ECO 5 systems
RADIO IC
TEA 5757T
1101
(1102)
FM
A
B
C
1103
AM-FRAME AERIAL
FM-RF
FM-Osc.
AM-Osc.
AM-RF
V Loop
FM frontend
FM Mixer
FM Osc.
Pre-scaler
Multi-plexer
AM Osc.
AM Frontend
AM Mixer
AM IF
AM Det.
AGC
IF1
IF2
FM Det.
Stereo Decoder
CONTROL
programmable output ports
P1
P0
Charge pump
AFC
AFC -
AFC +
Reference Oscillator
V Stab A
V Stab B
10,7 MHz
450kHz
Discriminator
buffer ampl.
RDS (MPX)
LF filter
VCO
Vcc1
Vdd
Vcc2
Vcc
1124
right
left
stereo
clock
data
enable
Version
1126
1121
MW/LW
AM-RF,
AM-Osc.
75kHz
Vdd
Vcc1
Vcc2
1
2
3
4
5
6
43
3
39
37
35
33
18
10
11
9
15
14
24
27
28
29
31
30
8
38
34
23
7
22
40
41
36
44
32
19
20
25
ECO5 sys., 240698

TUNER BOARD ECO5 / Systems


FM 300 OHM
FM 50 OHM
AM FRAME AERIAL
MW/LW-RF
LW
MW
Service Solution for Local/DX - switching
remove
FM-RF
Q-MULTIPLIER 7102 2SA838B
FM-OSCILLATOR
VCO
AM-IF1
AM-IF2
FM-IF1
FM-IF2
AM-AFC 450 kHz
450 kHz
SFU450B
2SC1047
7101 TEA5757 z_TEA5759
AGC
AM Frontend
AM MIXER
AM IF
FM IF1
FM IF2
AM OSC
FM Frontend
FM MIXER
FM OSC
Pre-scaler
Multi-plexer
AM DET
FM DET
STABILIZER
Charge Pump
STEREO DECODER
CONTROL
XTAL OSC.
AFC
DISCRIMINATOR
buffer amplifier
AM-OSCILLATOR
version detection
Programmable Output Ports
to/from CONTROL BOARD
to/from COMBI BOARD / Source Selector part
to/from AM-stereo module
to 1130,1131 AM Stereo module
150kHz, 50mVpp
5V
0V
stereo mono stereo
enable
data
clock
stereo
left
GND
right
Vcc
V+
STSIG
VCO-kill
R-out
L-out
L-FM
R-FM
+FM
AM-IF
Chip jumper
HN1V02H
2140 exchanged by 2164 (SMD type 0805) from layout stage 3317.9 onwards respectively 3103 303 3380.1 and 3103 308 3396.1
3140 and 5120 provisional as alternative

VERSION PROGRAMMING COMPONENTS	6120	3156	3157	3170	remark
/00 FM/MW/LW	x	-	-	-	7111 not mounted
/00 FM/MW/LW/SW-Eu	-	-	-	-	
/01 FM/MW-Stereo	-	-	x	-	SW
/01 FM/MW	-	x	-	x	
/01 FM/MW/SW-Ov	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FM/MW-Stereo	-	-	x	-	SW
/14 FM-OIRT/MW/LW	x	-	x	x	
/14 FM-OIRT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/.. FM/MW/2xSW	-	-	x	x	
/15 FM/MW/SW-Eu	-	x	x	x	

x = component mounted
SW = Software initialisation

r....for RDS version only
s...for East European version (/14/34) only
t....for Japanese version (/06/26) only
u...for 2-band (FM/AM) version only
v...for SW-version 3.9-12.1MHz only
w...for LW only
x....not for all versions
y....for USA version (/17/37) only
z....for AM-STEREO (/06/13/26/33) versions only

Signal path
- FM
- AM
- MPX (Audio Frequency)
- AF - left/right

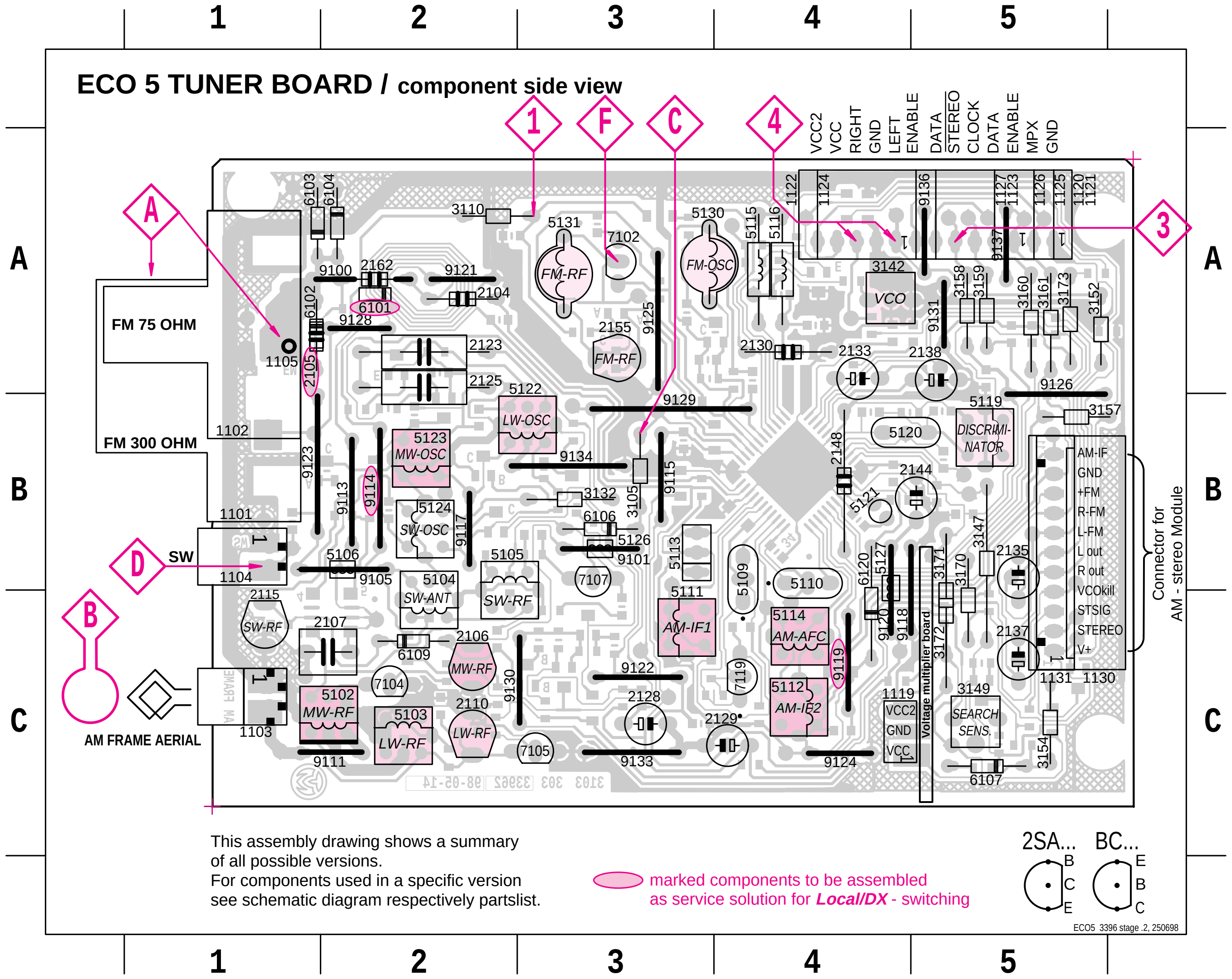
EVM
- Vdc FM mode stereo
- Vdc MW mode
- Vdc LW mode

Voltages measured while set is tuned to a strong transmitter

1101	A 1
1102	B 2
1103	D 2
1121	E20
1124	G20
1126	E20
1130	I20
1131	I20
2101	C 6
2102	G 7
2103	D 9
2104	B 6
2106	F 5
2107	G 6
2108	G 3
2109	G 3
2111	C13
2120	L11
2122	N11
2123	M11
2125	M11
2126	G 9
2127	G10
2128	C11
2129	C 9
2130	H17
2131	I10
2132	I10
2133	H11
2134	J17
2135	J18
2136	J17
2137	J18
2138	H12
2139	H13
2140	H14
2141	H14
2142	H14
2143	I17
2144	H17
2145	G16
2146	F15
2147	F16
2148	F16
2149	C15
2150	B13
2152	F 7
2153	E 8
2154	E 7
2155	D 8
2158	M11
2159	F 9
2160	M12
2161	D16
2163	E16
2164	H14
2165	C 9
2166	G16
2167	F16
2168	I 13
3101	E 7
3102	E 7
3103	C 8
3104	B11
3105	C 7
3108	E 3
3109	F 2
3110	F 6
3113	C13
3119	B13
3120	C 6
3123	M 7
3125	M 6
3128	M 8
3132	L 9
3134	M12
3137	M13
3140	I13
3141	G10
3142	G 9
3143	I10
3144	I10
3145	H10
3146	I17
3147	I15
3152	H18
3153	H19
3154	H18
3155	H17
3156	G17
3157	F17
3158	F18
3159	F18
3160	E18
3161	E18
3167	G18
3169	G15
3170	F17
3171	H15
3175	B16
3176	J 9
3177	I18
3178	I15
3179	I16
3180	M7
4101	G 5
4102	F 5
4103	G 9
4104	B13
4105	B11
4106	K12
4108	L 9
5102	E 4
5103	F 4
5109	B13
5110	B14
5111	A13
5112	A15
5113	B12
5114	C16
5119	I 12
5120	H13
5121	F15
5122	M11
5123	L11
5130	E 8
5131	D 8
6103	C 2
6104	C 3
6105	K12
6105	E 6
6106	C 6
6107	H17
6120	G16
6130	E 7
6131	D 7
7101	G11
7102	D 8
7103	I 9
7104	E 3
7105	F 2
7109	M 7
7111	F18
7119	B13
7122	M 9
7124	M13
7125	I16
9100	B 4
9101	C 6
9117	L10
9128	A 4

1101	A1	2106	C2	2137	C5	3149	C5	3173	A5	5114	C4	5130	A3	7104	C2	9117	B2	9129	B3
1102	A1	2107	C2	2138	A5	3152	A5	5102	C2	5115	A4	5131	A3	7105	C3	9118	B4	9130	C3
1103	C1	2110	C2	2144	B5	3154	C5	5103	C2	5116	A4	6101	A2	7107	B3	9119	C4	9131	A5
1104	B1	2115	C1	2148	B4	3157	B5	5104	C2	5119	B5	6102	A1	7119	C4	9120	B4	9133	C3
1105	A1	2123	A2	2155	A3	3158	A5	5105	B2	5120	B4	6103	A1	9100	A2	9121	A2	9134	B3
1119	C5	2125	A2	2162	A2	3159	A5	5106	B2	5121	B4	6104	A2	9101	B3	9122	C3	9136	A5
1120	A5	2128	C3	3105	B3	3160	A5	5109	B4	5122	B3	6106	B3	9105	B2	9123	B1	9137	A5
1130	B5	2129	C4	3110	A2	3161	A5	5110	B4	5123	B2	6107	C5	9111	C2	9124	C4		
1131	B5	2130	A4	3132	B3	3170	C5	5111	C3	5124	B2	6109	C2	9113	B2	9125	A3		
2104	A2	2133	A4	3142	A4	3171	C5	5112	C4	5126	B3	6120	C4	9114	B2	9126	B5		
2105	A1	2135	B5	3147	B5	3172	C5	5113	B3	5127	B4	7102	A3	9115	B3	9128	A2		

ECO 5 TUNER BOARD / component side view

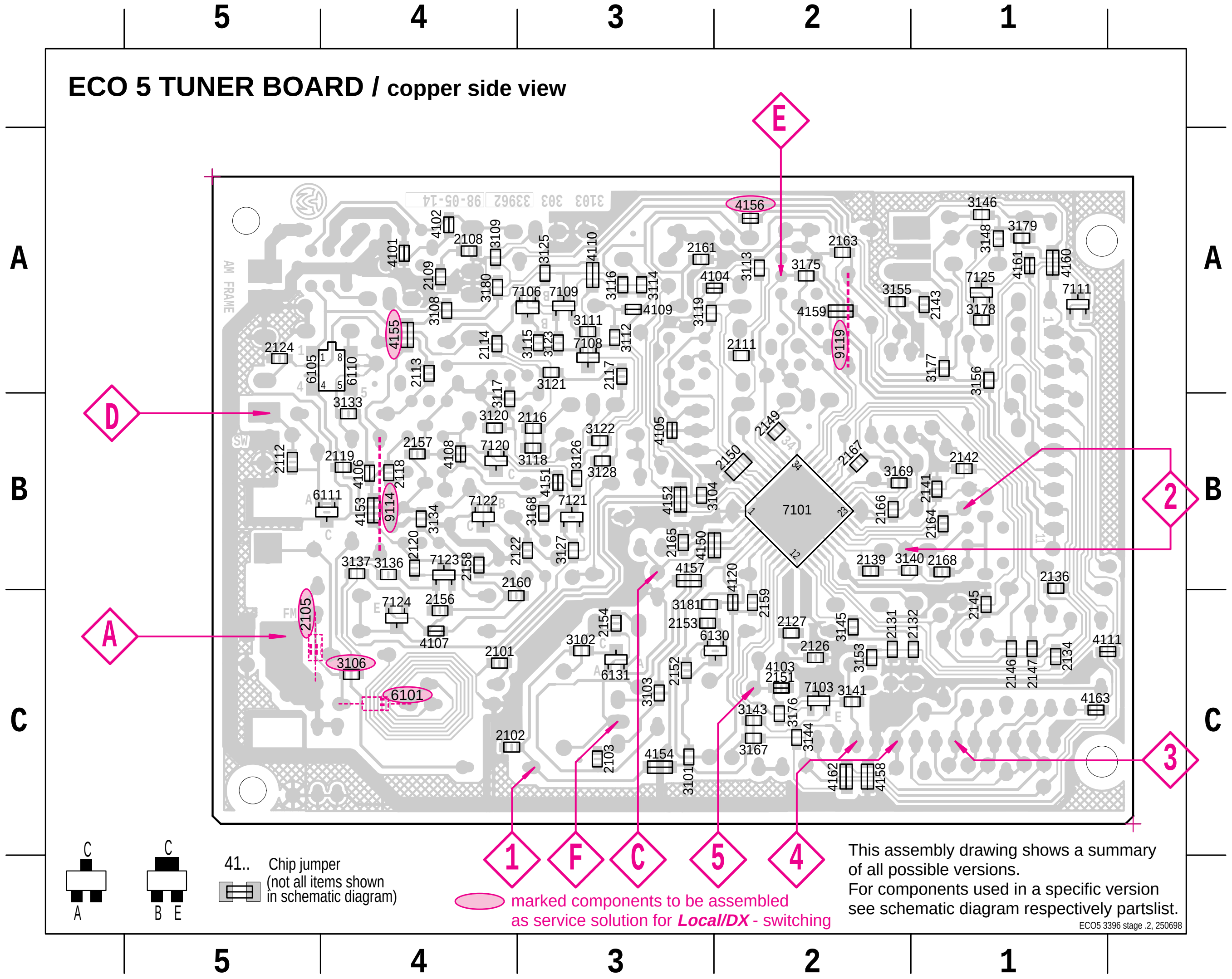

1
2
3
4
5
A
B
C
1
F
C
4
3
A
D
B
VCC2
VCC
RIGHT
GND
LEFT
ENABLE
DATA
STEREO
CLOCK
DATA
ENABLE
MPX
GND
FM 75 OHM
FM 300 OHM
SW
AM FRAME AERIAL
FM-RF
FM-OSC
VCO
MW-OSC
LW-OSC
SW-OSC
SW-ANT
SW-RF
MW-RF
LW-RF
AM-IF1
AM-IF2
AM-AFC
DISCRIMI-NATOR
SEARCH SENS.
AM-IF
GND
+FM
R-FM
L-FM
L out
R out
VCOkill
STSIG
STEREO
V+
VCC2
GND
VCC
Voltage multiplier board
Connector for AM - stereo Module
2SA...
BC...
B
C
E
E
B
C
ECO5 3396 stage 2, 250698

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

marked components to be assembled as service solution for ***Local/DX*** - switching

2101	C4	2120	B4	2145	C1	2160	C4	3108	A4	3122	B3	3144	C2	3178	A1	4110	A3	4160	A1	7109	A3
2102	C4	2122	B3	2146	C1	2161	A3	3109	A4	3123	A3	3145	C2	3179	A1	4111	C1	4161	A1	7111	A1
2103	C3	2124	A5	2147	C1	2163	A2	3111	A3	3125	A3	3146	A1	3180	A4	4120	C2	4162	C1	7120	B4
2108	A4	2126	C2	2149	B2	2164	B1	3112	A3	3126	B3	3148	A1	3181	C3	4150	B2	4163	C1	7121	B3
2109	A4	2127	C2	2150	B2	2165	B3	3113	A2	3127	B3	3153	C2	4101	A4	4151	B3	6105	A4	7122	B4
2111	A2	2131	C2	2151	C2	2166	B2	3114	A3	3128	B3	3155	A2	4102	A4	4152	B3	6110	A4	7123	B4
2112	B5	2132	C1	2152	C3	2167	B2	3115	A3	3133	B4	3156	A1	4103	C2	4153	B4	6111	B4	7124	C4
2113	A4	2134	C1	2153	C3	2168	B 1	3116	A3	3134	B4	3167	C2	4104	A2	4154	C3	6130	C2	7125	A1
2114	A4	2136	B1	2154	C3	3101	C3	3117	B4	3136	B4	3168	B3	4105	B3	4155	A4	6131	C3		
2116	B3	2139	B2	2156	C4	3102	C3	3118	B3	3137	B4	3169	B2	4106	B4	4156	A2	7101	B2		
2117	A3	2141	B1	2157	B4	3103	C3	3119	A3	3140	B2	3175	A2	4107	C4	4157	B3	7103	C2		
2118	B4	2142	B1	2158	B4	3104	B3	3120	B4	3141	C2	3176	C2	4108	B4	4158	C2	7106	A3		
2119	B4	2143	A1	2159	C2	3106	C4	3121	A3	3143	C2	3177	A1	4109	A3	4159	A2	7108	A3		

ECO 5 TUNER BOARD / copper side view


5
4
3
2
1
A
B
C
E
D
A
2
3
1
F
C
5
4
7101
C
C
A
B E
41..
Chip jumper
(not all items shown in schematic diagram)
ECO5 3396 stage 2, 250698

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

marked components to be assembled as service solution for ***Local/DX*** - switching

MISCELLANEOUS

1101	4822 267 31505	SOCKET 2P CLICKFIT
1102	4822 267 10283	SOCKET COAX, IEC 75Ω
1103	4822 265 31184	JST CONNECTOR 2 POLE

CAPACITORS

2101 ©	4822 126 13692	47pF	1%	63V
2101 ©	5322 122 32531	100pF	5%	50V
2102 ©	4822 122 33177	10nF	20%	50V
2103 ©	5322 122 31647	1nF	10%	63V
2104	4822 122 33195	100pF	10%	50V
2106	4822 125 60101	3-11pF TRIMCAP		
2107	4822 121 51319	1µF	20%	50V
2120 ©	5322 122 32658	22pF	5%	50V
2125	4822 121 10673	560PF	1%	630V
2126 ©	5322 122 31863	330pF	5%	50V
2127 ©	4822 126 13473	220nF	20%	50V
2128	4822 124 40248	10µF	20%	63V
2129	4822 124 41584	100µF	20%	10V
2130	4822 126 11585	22nF	20%	50V
2131 ©	4822 126 13482	470nF	20%	16V
2132 ©	4822 126 13482	470nF	20%	16V
2133	4822 124 21913	1µF	20%	63V
2134 ©	4822 126 13188	15nF	5%	63V
2134 ©	5322 122 32654	22nF	10%	63V
2135	4822 124 40746	0,22µF	20%	63V
2136 ©	4822 126 13188	15nF	5%	63V
2136 ©	5322 122 32654	22nF	10%	63V
2137	4822 124 40746	0,22µF	20%	63V
2138	4822 124 22652	2,2µF	20%	50V
2139 ©	4822 126 14236	15pF	5%	50V
2141 ©	4822 126 13838	100nF	10%	50V
2142 ©	4822 126 13838	100nF	10%	50V
2143 ©	4822 126 13473	220nF	20%	50V
2144	4822 124 21913	1µF	20%	63V
2145 ©	4822 122 33575	220pF	5%	50V
2146 ©	4822 122 33575	220pF	5%	50V
2147 ©	4822 122 33575	220pF	5%	50V
2148	4822 126 11585	22nF	20%	50V
2149 ©	5322 122 32654	22nF	10%	63V
2150 ©	4822 122 33496	100nF	10%	63V
2152 ©	4822 126 12105	33nF	5%	63V
2153 ©	4822 126 13486	15pF	2%	63V
2155	4822 125 60101	3-11pF TRIMCAP		
2159 ©	5322 122 32659	33pF	5%	50V
2160 ©	5322 122 32654	22nF	10%	63V
2164 ©	4822 126 13482	470nF	20%	16V
2165 ©	4822 126 13838	100nF	10%	50V
2166 ©	5322 122 31647	1nF	10%	63V
2167 ©	4822 122 33926	12pF	5%	50V
2168 ©	4822 126 13695	82pF	1%	63V

RESISTORS

3101 ©	4822 051 20333	33kΩ	5%	0,1W
3102 ©	4822 117 10837	100kΩ	1%	0,1W
3103 ©	4822 117 10965	18kΩ	2%	0,1W
3104 ©	4822 117 11448	180Ω	10%	0,1W
3105	4822 116 83872	220Ω	5%	0,5W
3110	4822 116 52195	47Ω	5%	0,5W
3120 ©	4822 051 20008	CHIP JUMPER 0805		
3132	4822 116 52195	47Ω	5%	0,5W
3134 ©	4822 051 20223	22kΩ	5%	0,1W
3141 ©	4822 117 11148	56kΩ	1%	0,1W

RESISTORS

3142	4822 100 12159	TRIMPOT. 100kΩ		
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W
3146 ©	4822 051 20229	22Ω	5%	0,1W
3152	4822 116 83883	470Ω	5%	0,16W
3153 ©	4822 051 20471	470Ω	5%	0,1W
3154	4822 116 83868	150Ω	5%	0,5W
3155 ©	4822 051 20471	470Ω	5%	0,1W
3156 ©	4822 117 10837	100kΩ	1%	0,1W
3158	4822 116 83883	470Ω	5%	0,16W
3159	4822 116 83883	470Ω	5%	0,16W
3160	4822 116 83883	470Ω	5%	0,16W
3161	4822 116 83883	470Ω	5%	0,16W
3167 ©	4822 117 11503	220Ω	5%	0,1W
3169 ©	4822 051 20154	150kΩ	5%	0,1W
3170	4822 116 52234	100kΩ	5%	0,5W
3171	4822 116 52219	330Ω	5%	0,5W
4101 ©	4822 051 20008	CHIP JUMPER 0805		
4102 ©	4822 051 20008	CHIP JUMPER 0805		
4103 ©	4822 051 20008	CHIP JUMPER 0805		
4104 ©	4822 051 20008	CHIP JUMPER 0805		
4105 ©	4822 051 20008	CHIP JUMPER 0805		
4106 ©	4822 051 20008	CHIP JUMPER 0805		
4108 ©	4822 051 20008	CHIP JUMPER 0805		
4111 ©	4822 051 20008	CHIP JUMPER 0805		
4120 ©	4822 051 20008	CHIP JUMPER 0805		
4150 ©	4822 051 20008	CHIP JUMPER 0805		
4152 ©	4822 051 20008	CHIP JUMPER 0805		
4153 ©	4822 051 20008	CHIP JUMPER 0805		
4154 ©	4822 051 20008	CHIP JUMPER 0805		
4157 ©	4822 051 20008	CHIP JUMPER 0805		
4158 ©	4822 051 20008	CHIP JUMPER 0805		
4159 ©	4822 051 20008	CHIP JUMPER 0805		

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHz
5110	4822 242 70665	FM-IF FILTER 10,7MHz
5111	4822 158 60511	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz
5114	4822 157 70302	AM-IF FILTER 450kHz
5119	4822 157 11443	DISCRIMINATOR COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	4822 157 60517	RF-COIL AM
5130	4822 157 11843	RF COIL 1,5 TURNS
5131	4822 157 11843	RF COIL 1,5 TURNS

DIODES

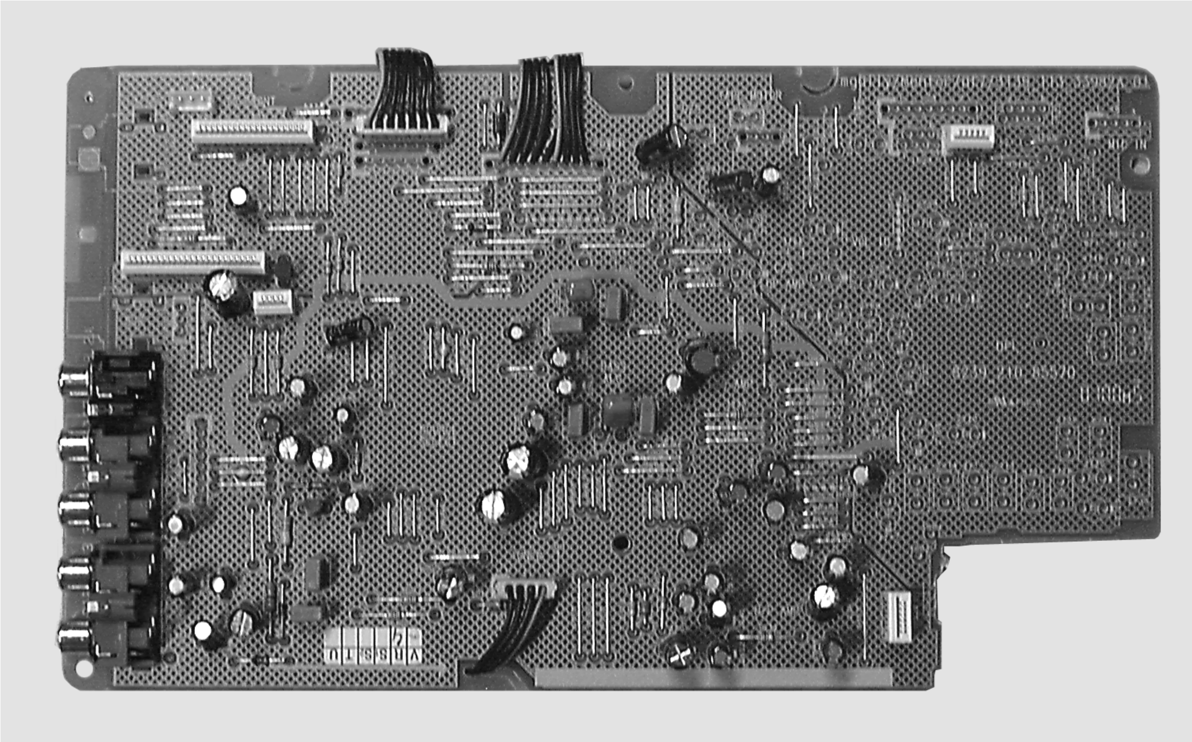
6103	4822 130 30621	1N4148
6104	4822 130 30621	1N4148
6105 ©	4822 130 83075	HN1V02H
6106	4822 130 30621	1N4148
6107	4822 130 34488	BZX79-C11
6120	4822 130 30621	1N4148
6130 ©	4822 130 82833	1SV228
6131 ©	4822 130 82833	1SV228

TRANSISTORS

7102	4822 130 60093	2SA838B
7111 ©	5322 130 42755	BC847C

INTEGRATED CIRCUITS

7101 ©	4822 209 90924	TEA5757H/V1, RADIO IC



AF7 Board

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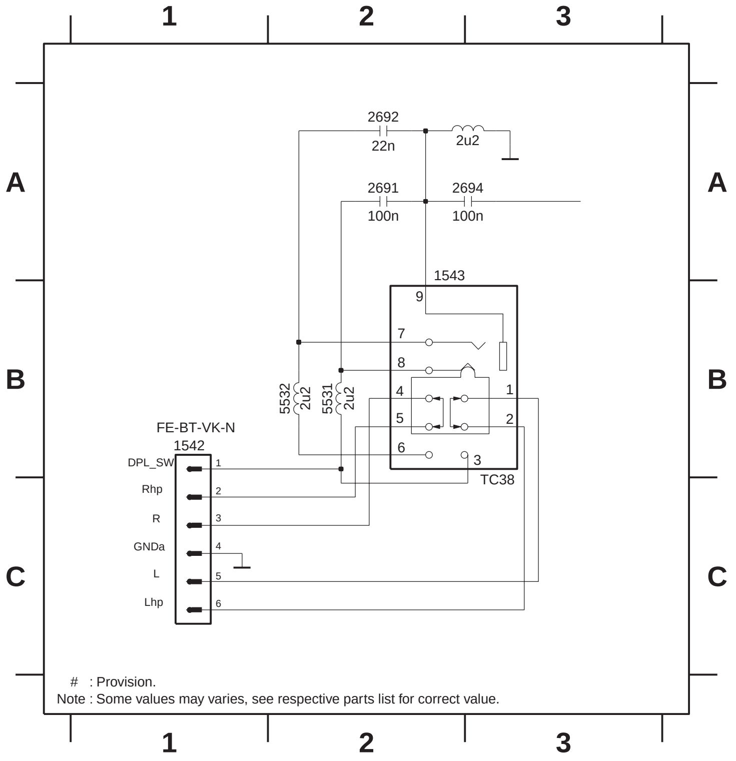
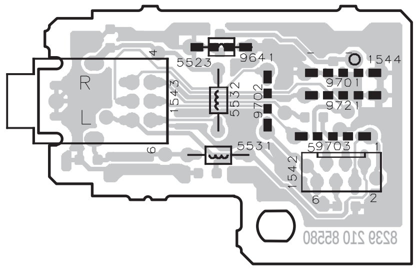
1543 A2	**2691 A2**	**2693 A3**	**2695 A2**	**5531 B2**	**9641 A3**


1
2
3
A
B
C
2692
22n
2u2
2691
100n
2694
100n
1543
9
7
8
4
5
6
1
2
3
5532
2u2
5531
2u2
FE-BT-VK-N
1542
DPL_SW
Rhp
R
GNDa
L
Lhp
TC38

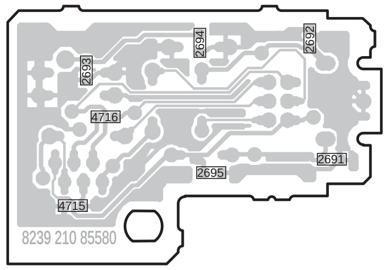
# : Provision.
Note : Some values may varies, see respective parts list for correct value.

Headphone Board

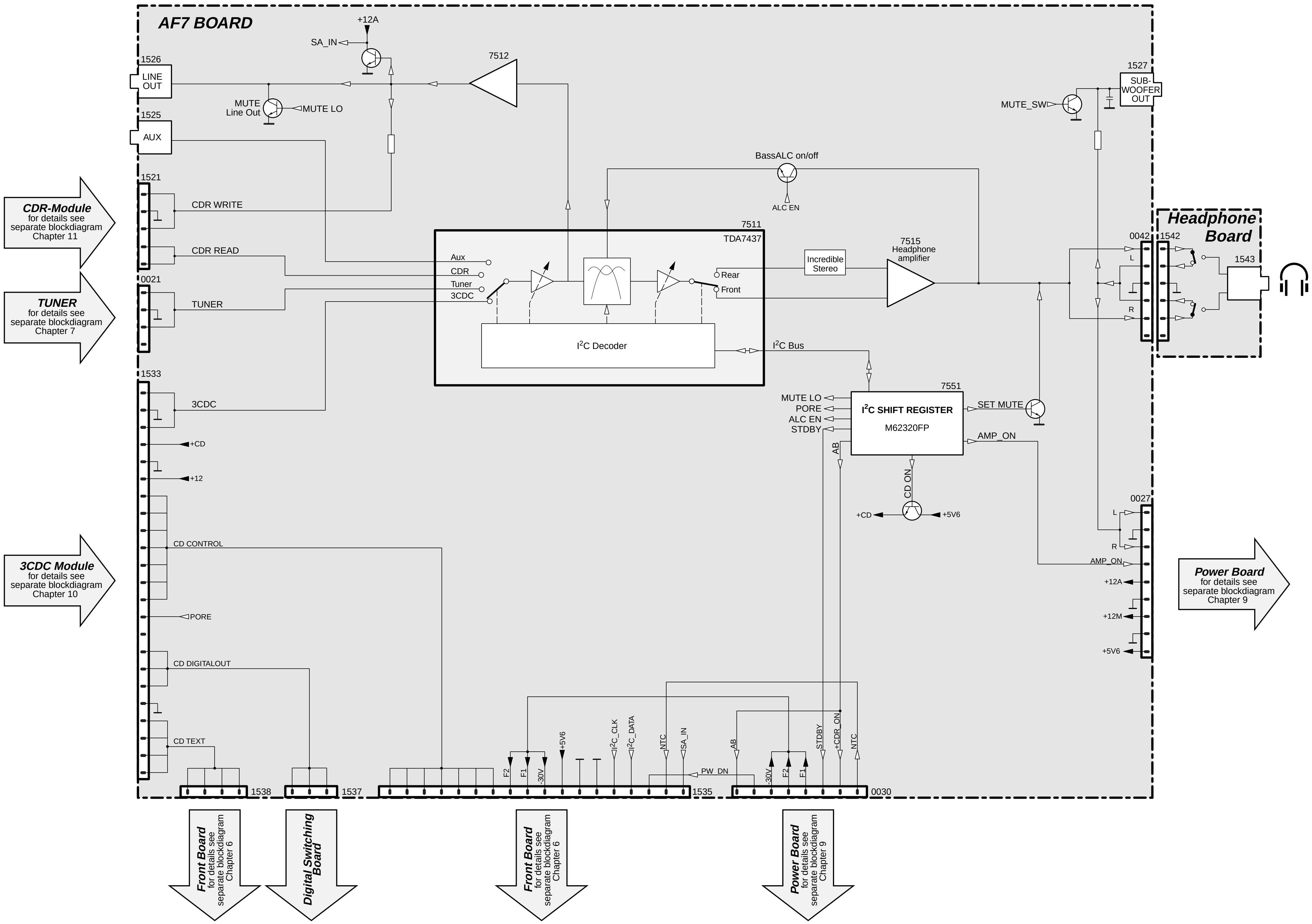
Componentside view


5523
9641
1544
1543
5532
9702
9701
9721
5531
9703
1542
R
L
8239 210 85580

Copperside view

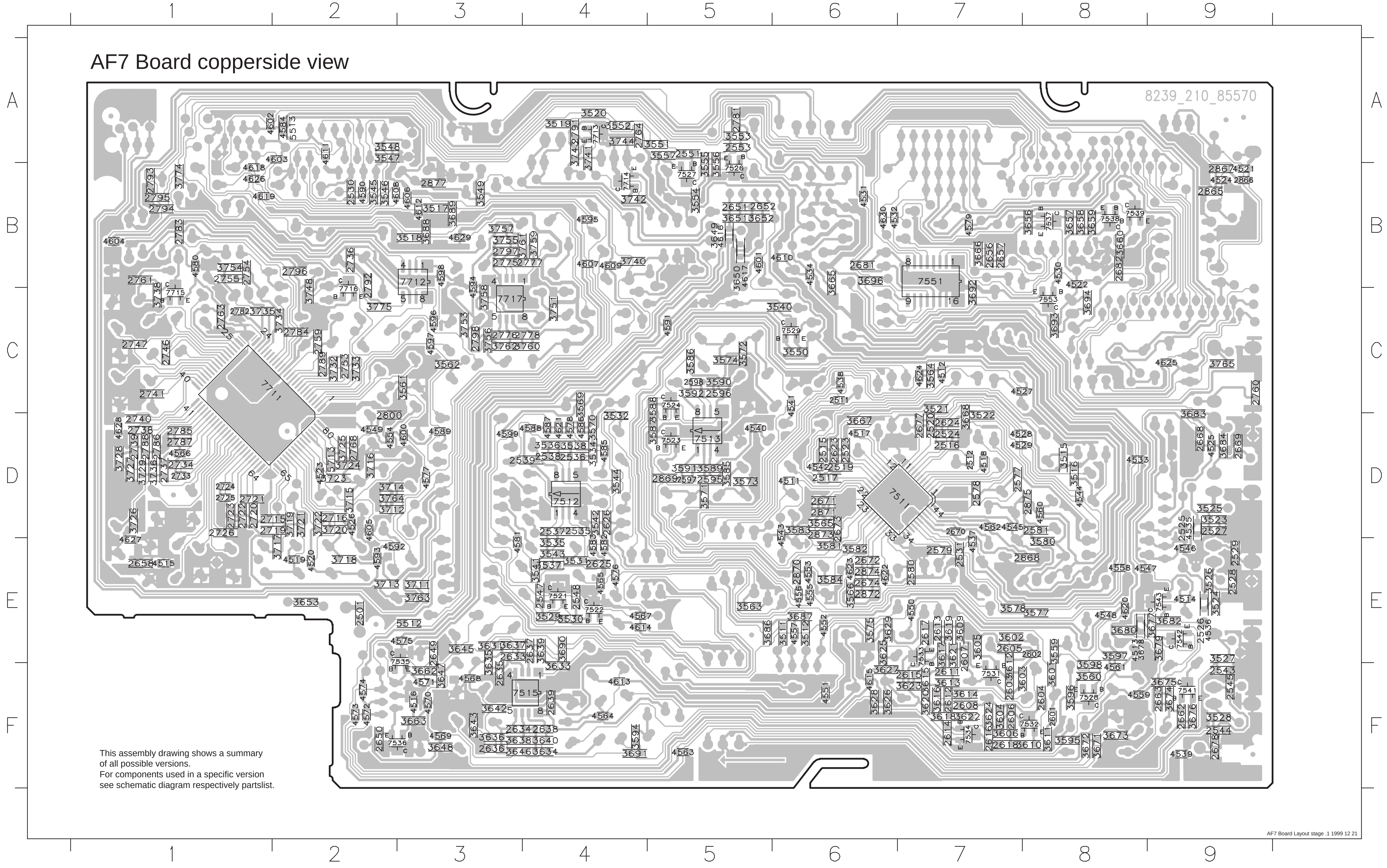

2694
2692
2693
4716
2691
2695
4715
8239 210 85580

Blockdiagram AF7 Board


AF7 BOARD
+12A
SA_IN
7512
1526
LINE OUT
MUTE Line Out
MUTE LO
1525
AUX
1527
SUB-WOOFER OUT
MUTE_SW
BassALC on/off
ALC EN
1521
CDR WRITE
CDR READ
CDR-Module
for details see separate blockdiagram Chapter 11
0021
TUNER
TUNER
for details see separate blockdiagram Chapter 7
7511
TDA7437
Aux
CDR
Tuner
3CDC
Rear
Front
I2C Decoder
Incredible Stereo
7515
Headphone amplifier
Headphone Board
0042
1542
1543
L
R
I2C Bus
1533
3CDC
+CD
+12
7551
MUTE LO
PORE
ALC EN
STDBY
I2C SHIFT REGISTER
M62320FP
SET MUTE
AMP_ON
AB
CD ON
+CD
+5V6
0027
L
R
AMP_ON
+12A
+12M
+5V6
Power Board
for details see separate blockdiagram Chapter 9
CD CONTROL
3CDC Module
for details see separate blockdiagram Chapter 10
PORE
CD DIGITALOUT
CD TEXT
F2
F1
-30V
+5V6
I2C_CLK
I2C_DATA
NTC
SA_IN
PW_DN
AB
-30V
F2
F1
STDBY
+CDR_ON
NTC
1538
1537
1535
0030
Front Board
for details see separate blockdiagram Chapter 6
Digital Switching Board
Front Board
for details see separate blockdiagram Chapter 6
Power Board
for details see separate blockdiagram Chapter 9

2501	E2
2511	C6
2512	D7
2515	D6
2516	D7
2517	D6
2519	D6
2520	D7
2523	D6
2524	D7
2525	D9
2526	E9
2527	D9
2528	E9
2529	E9
2530	B2
2531	E7
2535	D4
2536	D4
2537	D4
2538	D4
2539	D3
2543	F9
2544	F9
2545	F9
2547	E4
2548	E4
2551	A5
2553	A5
2577	D7
2578	D7
2579	E7
2580	E7
2581	D8
2595	D5
2596	C5
2597	D5
2598	C5
2601	F8
2602	E8
2603	F7
2604	F8
2605	E7
2606	F7
2607	E7
2608	F7
2611	F7
2612	F7
2613	E7
2614	F7
2615	F7
2616	F7
2617	E7
2618	F7
2623	D6
2624	D7
2625	E4
2626	D4
2633	E3
2634	F3
2635	F3
2636	F3
2637	E4
2638	F4
2639	F4
2649	E3
2650	F2
2651	B5
2652	B5
2656	B7
2657	B7
2658	E1
2662	F9
2663	F9
2668	D9
2669	D9
2670	D7
2671	D6
2672	E6
2673	D6
2674	E6
2677	D7
2678	F9
2681	B6
2682	B8
2715	D2
2716	D2
2719	D2
2720	D1
2721	D1
2722	D1
2723	D1
2724	D1
2725	D1
2726	D1
2733	D1
2734	D1
2736	B2
2737	D1
2738	D1
2739	D1
2740	D1
2741	C1
2746	C1
2747	C1
2753	C2
2754	B1
2755	B1
2759	C2
2760	C9
2761	B1
2763	C1
2764	A4
2768	D2
2775	B3
2776	C3
2777	B4
2778	C4
2781	A5
2782	C1
2783	B1
2784	C2
2785	D1
2786	D1
2787	D1
2788	D1
2789	C2
2791	A4
2792	B2
2793	B1
2794	B1
2795	B1
2796	B2
2797	B3
2798	C3
2800	D2
2865	B9
2866	B9
2867	B9
2868	E8
2869	D5
2870	E6
2871	D6
2872	E6
2873	D6
2874	E6
2875	D8
2877	B3
3511	E6
3512	E6
3515	D8
3516	D8
3517	B3
3518	B3
3519	A4
3520	A4
3521	C7
3522	D7
3523	D9
3524	E9
3525	D9
3526	E9
3527	E9
3528	F9
3529	E4
3530	E4
3531	E4
3532	D4
3534	D4
3535	E4
3536	D4
3537	E4
3538	D4
3540	C6
3541	E4
3542	D4
3543	E4
3544	D4
3545	B2
3546	B2
3547	A2
3548	A2
3549	B3
3550	C6
3551	A5
3552	A4
3553	A5
3554	B5
3555	B5
3556	B5
3557	A5
3559	E8
3560	F8
3561	C3
3562	C3
3563	E5
3564	C7
3565	D6
3566	E6
3569	C4
3570	D4
3571	D5
3572	C5
3573	D5
3574	C5
3575	E6
3577	E8
3578	E7
3580	E8
3581	E6
3582	E6
3583	D6
3584	E6
3585	D5
3586	C5
3587	D5
3588	C5
3589	D5
3590	C5
3591	D5
3592	C5
3594	F4
3595	F8
3596	F8
3597	E8
3598	F8
3601	F8
3602	E7
3603	F7
3604	F7
3605	E7
3606	F7
3609	E7
3610	F8
3611	F8
3612	F7
3613	F7
3614	F7
3615	F7
3616	F7
3617	E7
3618	F7
3619	E7
3620	F7
3621	E7
3622	F7
3623	F7
3624	F7
3625	E6
3626	F6
3627	F6
3628	F6
3629	E6
3631	E3
3633	F4
3634	F4
3635	E3
3636	F3
3637	E3
3638	F3
3639	E4
3640	F4
3642	F3
3643	F3
3645	E3
3646	F3
3647	F3
3648	F3
3649	B5
3650	B5
3651	B5
3652	B5
3653	E2
3656	B8
3657	B8
3658	B8
3659	B8
3660	B8
3662	F3
3663	F3
3665	B6
3666	B7
3667	D6
3668	D7
3671	F8
3672	F8
3673	F8
3674	F9
3675	F9
3676	F9
3677	E9
3678	E8
3679	E9
3680	E8
3682	E9
3683	D9
3684	D9
3686	E5
3687	E6
3688	B3
3689	B3
3690	E4
3691	F4
3692	C7
3693	C8
3694	C8
3696	B6
3711	E3
3712	D2
3713	E2
3714	D2
3715	D2
3716	D2
3717	E2
3718	E2
3719	D2
3720	D2
3721	D2
3722	D2
3723	D2
3724	D2
3725	D2
3726	D1
3727	D1
3728	D1
3729	D1
3732	C2
3733	C2
3734	C2
3735	C1
3736	D1
3738	C1
3740	B4
3741	A4
3742	B4
3743	A4
3744	A4
3748	C2
3751	C4
3753	C3
3754	B1
3755	B3
3756	C3
3757	B3
3758	C3
3759	B4
3760	C4
3761	B3
3762	C3
3763	E3
3764	D2
3765	C9
3774	B1
3775	C2
4511	D6
4512	C7
4513	E8
4514	E9
4515	E1
4516	F3
4517	D6
4518	D7
4519	E2
4520	E2
4521	B9
4522	B8
4523	D2
4524	B9
4525	D9
4526	D2
4527	C7
4528	D7
4529	D7
4530	B8
4531	B6
4532	B6
4533	D8
4534	B6
4535	D9
4536	E9
4537	E7
4538	C6
4539	F9
4540	D5
4541	C6
4542	D6
4543	D6
4544	D8
4545	D7
4546	E9
4547	E8
4548	E8
4549	D2
4550	E7
4551	F6
4552	E6
4553	E6
4554	D2
4555	E6
4556	E6
4557	E6
4558	E8
4559	F8
4560	D8
4561	F8
4562	D7
4563	F5
4564	F4
4565	E4
4566	D1
4567	E4
4568	F3
4569	F3
4570	F3
4571	F3
4572	F2
4573	F2
4574	F2
4575	E3
4576	E4
4577	D3
4578	D4
4579	B7
4580	B1
4581	E3
4582	E4
4583	E4
4584	A2
4585	D4
4586	D4
4587	D4
4588	D4
4589	D3
4590	B2
4591	C5
4592	E2
4593	E2
4594	B3
4595	B4
4596	C3
4597	C3
4598	B3
4599	D3
4600	D3
4601	B5
4602	A1
4603	A2
4604	B1
4605	D2
4606	B3
4607	B4
4608	B2
4609	B4
4610	B6
4611	A2
4612	B3
4613	F4
4614	E4
4615	F6
4616	B5
4617	B5
4618	B1
4619	B1
4620	E8
4621	D4
4622	E6
4623	E6
4624	C7
4625	C9
4626	B1
4627	E1
4628	D1
4629	B3
4630	B6
5512	E3
5513	A2
5713	D2
7511	D7
7512	D4
7513	D5
7515	F4
7521	E4
7522	E4
7523	D5
7524	C5
7526	B5
7527	B5
7528	F8
7529	C6
7531	F7
7532	F8
7533	E7
7534	F7
7535	E3
7536	F2
7537	B8
7538	B8
7539	B8
7541	F9
7542	E9
7543	E9
7551	B7
7553	C8
7711	C1
7712	B3
7713	A4
7714	B4
7715	C1
7716	C2
7717	C3

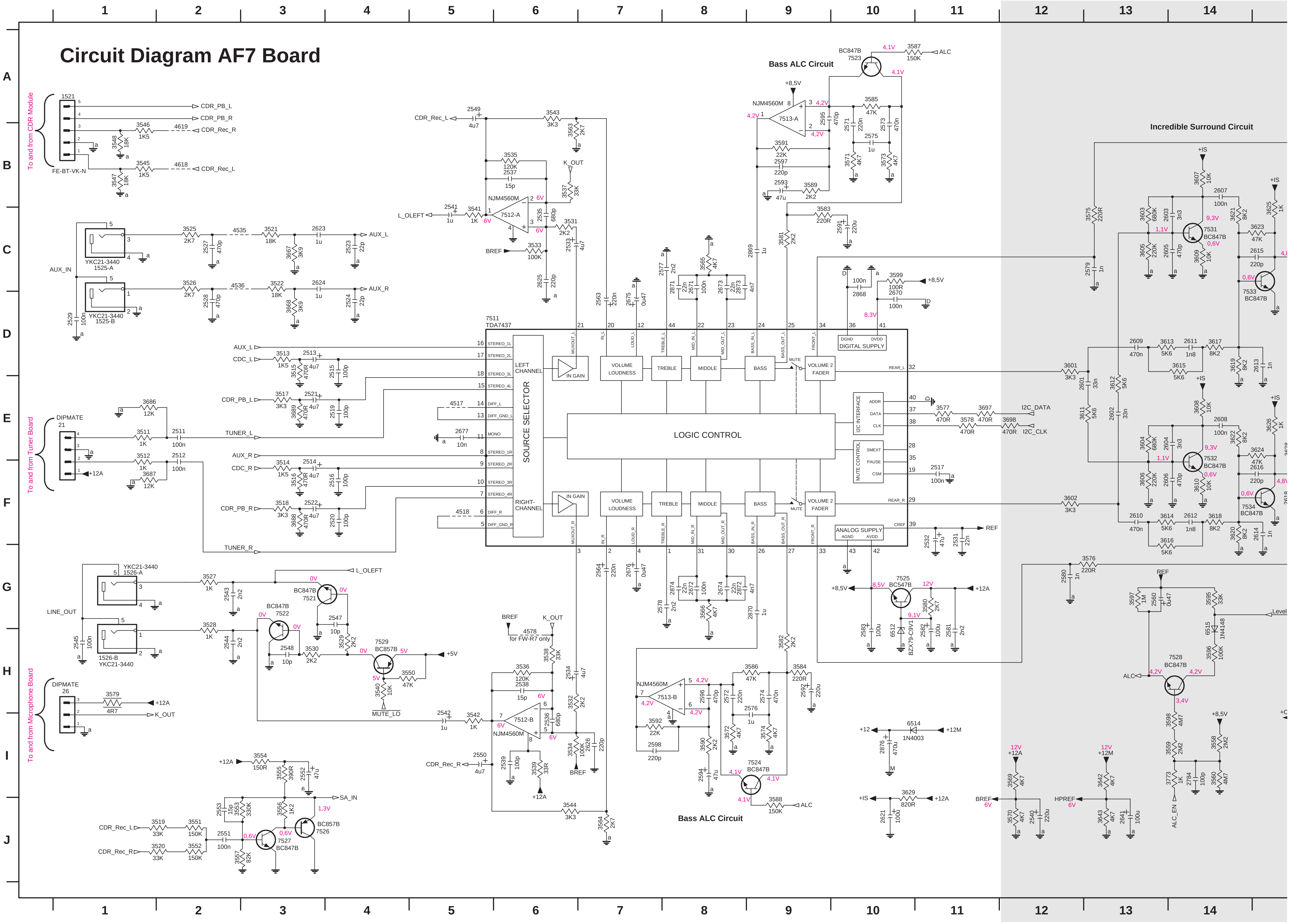
AF7 Board copperside view

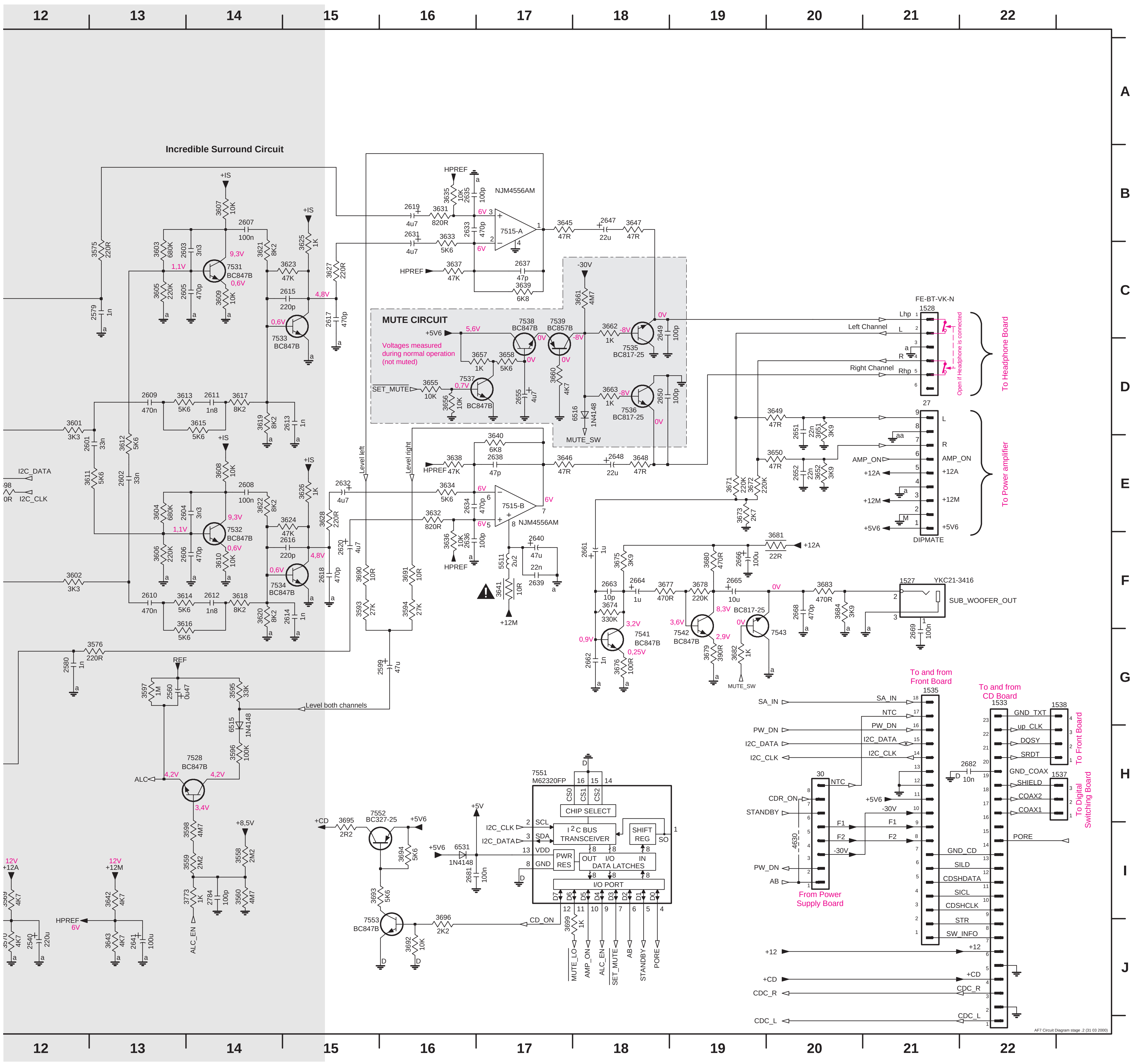


This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

AF7 Board Layout stage .1 1999 12 21

Circuit Diagram AF7 Board


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I J
Bass ALC Circuit
Incredible Surround Circuit
To and from CDR Module
To and from Tuner Board
To and from Microphone Board
1521
FE-BT-VK-N
CDR_PB_L
CDR_PB_R
CDR_Rec_R
CDR_Rec_L
AUX_IN
YKC21-3440 1525-A
YKC21-3440 1525-B
AUX_L
AUX_R
DIPMATE 21
TUNER_L
TUNER_R
+12A
LINE_OUT
YKC21-3440 1526-A
1526-B YKC21-3440
L_OLEFT
BC847B 7521
BC847B 7522
BC857B 7529
+5V
MUTE_LO
DIPMATE 26
K_OUT
SA_IN
BC857B 7526
BC847B 7527
7511 TDA7437
SOURCE SELECTOR
LEFT CHANNEL
RIGHT-CHANNEL
IN GAIN
VOLUME LOUDNESS
TREBLE
MIDDLE
BASS
MUTE
VOLUME 2 FADER
DIGITAL SUPPLY
ANALOG SUPPLY
LOGIC CONTROL
I2C INTERFACE
ADDR
DATA
CLK
MUTE CONTROL
SMEXT
PAUSE
CSM
I2C_DATA
I2C_CLK
REF
NJM4560M 7512-A
NJM4560M 7512-B
NJM4560M 7513-A
NJM4560M 7513-B
BC847B 7523
BC847B 7524
ALC
BREF
4578 for FW-R7 only
BC547B 7525
BZX79-C9V1
1N4003
+8,5V
+12M
+IS
BC847B 7531
BC847B 7532
BC847B 7533
BC847B 7534
BC847B 7528
1N4148
Level
ALC_EN
HPREF
+12
CDR_Rec_L
CDR_Rec_R

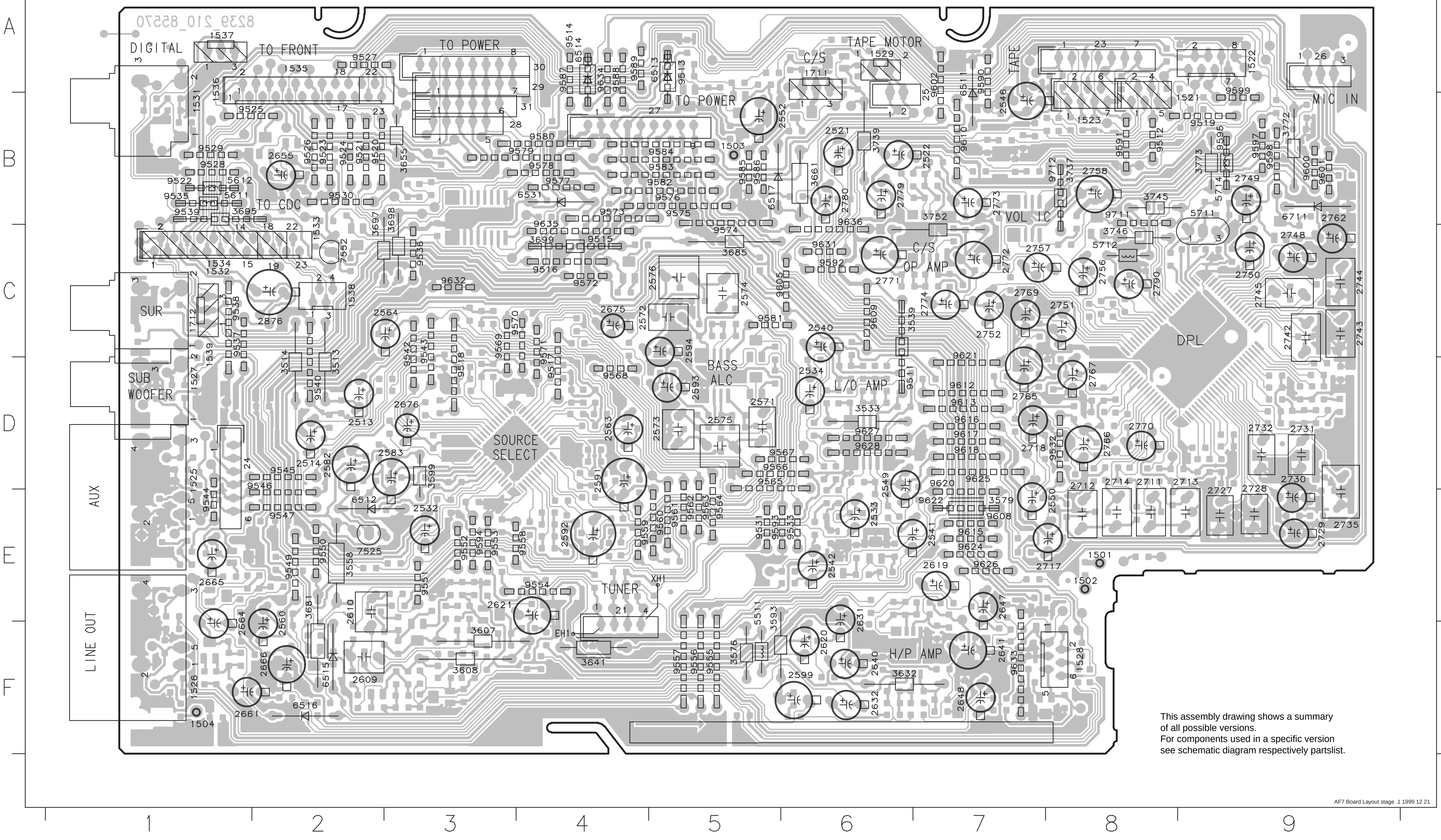

12
13
14
15
16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
Incredible Surround Circuit
MUTE CIRCUIT
Voltages measured
during normal operation
(not muted)
+IS
7531
BC847B
7532
BC847B
7533
BC847B
7534
BC847B
7528
BC847B
NJM4556AM
7515-A
7515-B
HPREF
7538
BC847B
7539
BC857B
7537
BC847B
7535
BC817-25
7536
BC817-25
SET_MUTE
MUTE_SW
-30V
Left Channel
Right Channel
FE-BT-VK-N
1528
Lhp
L
R
Rhp
Open if Headphone is connected
To Headphone Board
27
DIPMATE
L
R
AMP_ON
+12A
+12M
+5V6
To Power amplifier
Level left
Level right
Level both channels
I2C_DATA
I2C_CLK
ALC
ALC_EN
REF
1527
YKC21-3416
SUB_WOOFER_OUT
7541
BC847B
7542
BC847B
7543
BC817-25
7551
M62320FP
CHIP SELECT
I²C BUS
TRANSCEIVER
SHIFT
REG
PWR
RES
OUT I/O IN
DATA LATCHES
I/O PORT
SCL
SDA
VDD
GND
SO
CS0
CS1
CS2
MUTE_LO
AMP_ON
ALC_EN
SET_MUTE
AB
STANDBY
PORE
7552
BC327-25
7553
BC847B
+CD
CD_ON
+5V
+5V6
+8,5V
1N4148
To and from
Front Board
1535
SA_IN
PW_DN
I2C_DATA
I2C_CLK
NTC
To and from
CD Board
1533
1538
GND_TXT
up_CLK
DQSY
SRDT
To Front Board
1537
GND_COAX
SHIELD
COAX2
COAX1
To Digital
Switching Board
PORE
CDR_ON
STANDBY
F1
F2
GND_CD
SILD
CDSHDATA
SICL
CDSHCLK
STR
SW_INFO
+12
+CD
CDC_R
CDC_L
30
4630
From Power
Supply Board
AF7 Circuit Diagram stage .2 (31 03 2000)

0021	E1	2617	C15	3552	J2	3651	E20
0026	H1	2618	F15	3553	J3	3652	E20
0027	D21	2619	B16	3554	I3	3655	D16
0030	H20	2620	F15	3555	I3	3656	D16
1521	A1	2621	J10	3556	J3	3657	D17
1525	C1	2623	C3	3557	J3	3658	D17
1526	H1	2624	C3	3558	I14	3660	D17
1527	F21	2625	C6	3559	I14	3661	C18
1528	C21	2626	I7	3560	I14	3662	D18
1533	G22	2631	C16	3563	B6	3663	D18
1535	G21	2632	E15	3564	J7	3667	C3
1537	H22	2633	C16	3565	C8	3668	C3
1538	G22	2634	E16	3566	G8	3671	E19
2216	F15	2635	B16	3569	I12	3672	E19
2355	D17	2636	F16	3570	J12	3673	E19
2511	E2	2637	C17	3571	B10	3674	F18
2512	E2	2638	E17	3572	I8	3675	F18
2513	D3	2639	F17	3573	B10	3676	G18
2514	F3	2640	F17	3574	I9	3677	F18
2515	D4	2641	J13	3575	C13	3678	F19
2516	F4	2647	B18	3576	G13	3679	G19
2517	F11	2648	E18	3577	E11	3680	F19
2519	E4	2649	D18	3578	E11	3681	F20
2520	F4	2650	D18	3579	H1	3682	G19
2521	E3	2651	E20	3580	G11	3683	F20
2522	F3	2652	E20	3581	C9	3684	F20
2523	C4	2661	F18	3582	H9	3686	E1
2524	C4	2662	G18	3583	C9	3687	F1
2527	C2	2663	F18	3584	H9	3688	F3
2528	D2	2664	F18	3585	A10	3689	E3
2531	G11	2665	F19	3586	H9	3690	F15
2532	G11	2666	F19	3587	A10	3691	F16
2533	C6	2668	F20	3588	J9	3692	J16
2534	H6	2669	G21	3589	B9	3693	I15
2535	C6	2670	D10	3590	I8	3694	I16
2536	I6	2671	C8	3591	B9	3695	I15
2537	B6	2672	G8	3592	I7	3696	J16
2539	I6	2673	C8	3593	F15	3697	E11
2540	J12	2674	G8	3594	F16	3698	E12
2541	C5	2675	D7	3595	G14	3699	J17
2542	I5	2676	G7	3596	H14	3773	I14
2543	G2	2677	E5	3597	G13	3929	J10
2544	H2	2681	I16	3598	I14	4517	E5
2545	H1	2682	H22	3599	C10	4518	F5
2547	G4	2784	I14	3601	D12	4535	C2
2548	H3	2868	C10	3602	F12	4536	C2
2549	A5	2869	C9	3603	C13	4578	H6
2550	I5	2870	G9	3604	E13	4618	B2
2551	J2	2871	C8	3605	C13	4619	B2
2552	I3	2872	G8	3606	F13	4630	I20
2553	J2	2873	C8	3607	B14	5511	F17
2560	G13	2874	G8	3608	E14	5734	F15
2563	D7	2876	I10	3609	C14	6512	H10
2564	G7	3511	E1	3610	F14	6514	I10
2571	B10	3512	E1	3611	E13	6515	H14
2572	H8	3513	D3	3612	E13	6516	D18
2573	B10	3514	F3	3613	D13	6531	I16
2574	H9	3515	D3	3614	F13	7511	D6
2575	B10	3516	F3	3615	D14	7512-AC6	
2576	H9	3517	E3	3616	G13	7512-BI6	
2577	C8	3518	F3	3617	D14	7513-AA9	
2578	G8	3519	J1	3618	F14	7513-BH8	
2579	C13	3520	J1	3619	D14	7515-AB17	
2580	G12	3521	C3	3620	F14	7515-BE17	
2581	H11	3522	C3	3621	C14	7521	G3
2582	H11	3525	C2	3622	E14	7522	H3
2583	H10	3526	C2	3623	C15	7523	A10
2591	C10	3527	G2	3624	E15	7524	I9
2592	H9	3528	H2	3625	C15	7525	G10
2593	B9	3529	H4	3626	E15	7526	J3
2594	I8	3530	H3	3627	C15	7527	J3
2595	A9	3531	C6	3628	E15	7528	H14
2596	H8	3532	H6	3631	B16	7529	H4
2597	B9	3533	C6	3632	E16	7531	C14
2598	I7	3534	I6	3633	C16	7532	F14
2599	G16	3535	B6	3634	E16	7533	D15
2601	E13	3536	H6	3635	B16	7535	D18
2602	E13	3537	B6	3636	F16	7536	D18
2603	C14	3538	H6	3637	C16	7537	D17
2604	E14	3539	I6	3638	E16	7538	D17
2605	C14	3540	H4	3639	C17	7539	D17
2606	F14	3541	C5	3640	E17	7541	G18
2607	B14	3542	I5	3641	F17	7542	F19
2608	E14	3543	A6	3642	I13	7543	F19
2609	D13	3544	J6	3643	J13	7551	H17
2610	F13	3545	B1	3645	B17	7552	I15
2611	D14	3546	B1	3646	E17	7553	J16
2612	F14	3547	B1	3647	B18		
2613	D15	3548	B1	3648	E18		
2614	F15	3550	H4	3649	D20		
2615	C15	3551	J2	3650	E20		

21	E4	1504	F1	1535	A2	2534	D6	2573	D5	2619	E7	2666	F2	2731	D9	2757	C7	2780	B6	3608	F3
23	A8	1521	B8	1536	A2	2540	C6	2574	C5	2620	F6	2675	C4	2732	D9	2758	B8	2790	C8	3632	F6
24	D1	1522	A9	1537	A1	2541	E7	2575	D5	2621	E4	2676	D3	2735	E9	2762	B9	2876	C2	3641	F4
25	A6	1523	B8	1538	C2	2542	E6	2576	C5	2631	E6	2711	E8	2742	C9	2765	D8	3513	D2	3655	B3
26	A9	1525	E1	1539	C1	2546	A7	2582	D2	2632	F6	2712	E8	2743	C9	2766	D8	3514	D2	3661	B6
27	B4	1526	F1	1711	A6	2549	D7	2583	D3	2640	F6	2713	E9	2744	C9	2767	D8	3533	D6	3681	F2
28	B3	1527	D1	1712	C1	2550	E8	2591	D5	2641	F7	2714	E8	2745	C9	2769	C7	3539	C6	3685	C5
29	A3	1528	F8	2513	D2	2552	B6	2592	E4	2647	E7	2717	E8	2748	C9	2770	D8	3558	E2	3695	B1
30	A3	1529	A6	2514	D2	2560	F2	2593	D5	2648	F7	2718	D8	2749	B9	2771	C6	3576	F5	3697	C2
31	A3	1531	B1	2521	B6	2563	D4	2594	C5	2655	B2	2727	E9	2750	C9	2772	C7	3579	E7	3698	C3
1501	E8	1532	C1	2522	B6	2564	C3	2599	F6	2661	F1	2728	E9	2751	C8	2773	B7	3593	F5	3699	C4
1502	E8	1533	C1	2532	E3	2571	D5	2609	F2	2664	E1	2729	E9	2752	C7	2774	C7	3599	D3	3737	B8
1503	B5	1534	C1	2533	E6	2572	C5	2610	E3	2665	E1	2730	D9	2756	C8	2779	B6	3607	F3	3739	B6

3745	B8	6513	A5	9515	C4	9528	B1	9543	C3	9557	F5	9570	C4	9583	B5	9597	B9	9616	D7	9633	F7
3746	C8	6514	A4	9516	C4	9529	B1	9544	E1	9558	E4	9571	C4	9584	B5	9598	B9	9617	D7	9634	A4
3752	C7	6515	F2	9517	D4	9530	B2	9545	D2	9559	E4	9572	C4	9585	B5	9599	B9	9618	D7	9635	C4
3772	B9	6516	F2	9518	D3	9531	E5	9546	D2	9560	E5	9573	B4	9586	B5	9600	B9	9620	E7	9636	C6
3773	B9	6517	B5	9519	B9	9532	D8	9547	E2	9561	E5	9574	C5	9587	A4	9601	B9	9621	D7	9711	C8
5511	F5	6531	B4	9520	B2	9533	E6	9549	E2	9562	E5	9575	B5	9588	A4	9602	A7	9622	E7	9712	B8
5611	B1	6711	B9	9521	B2	9535	B1	9550	E2	9563	E5	9576	B5	9589	A4	9605	C6	9624	E7		
5612	B1	7525	E2	9522	B1	9536	C3	9551	E3	9564	E5	9577	B4	9590	A7	9608	E7	9625	D7		
5711	B9	7552	C2	9523	B2	9537	C1	9552	E3	9565	D5	9578	B4	9591	B8	9609	C6	9626	E7		
5712	C8	9511	C6	9524	B2	9538	C1	9553	E3	9566	D5	9579	B4	9592	C6	9610	B7	9627	D6		
5714	B9	9512	B8	9525	B1	9539	B1	9554	E4	9567	D6	9580	B4	9593	E5	9612	D7	9628	D6		
6511	B7	9513	A5	9526	B2	9540	D2	9555	F5	9568	D4	9581	C5	9594	E3	9613	D7	9631	C6		
6512	E2	9514	A4	9527	A2	9542	C3	9556	F5	9569	C3	9582	B5	9595	B9	9615	E7	9632	C3		

AF7 Board componentside view



This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

AF7 Board Layout stage .1 1999 12 21

ELECTRICAL PARTSLIST AF7 BOARD

MISCELLANEOUS

1521	4822 267 10954	FFC SOCKET, 5P
1525	4822 267 20452	CINCH SOCKET 2P
1526	4822 267 20452	CINCH SOCKET 2P
1527	4822 267 31729	CINCH SOCKET, 1P
1528	4822 267 10731	FFC SOCKET, 6P
1533	4822 267 10757	FFC SOCKET, 23P, TOP ENTRY
1535	4822 265 11553	FFC SOCKET, 19P
1538	4822 267 10733	FFC SOCKET, 4P
1542	4822 267 10731	FFC SOCKET, 6P
1543	4822 265 11529	HEADPHONE SOCKET

CAPACITORS

2501 ©	4822 126 13838	100nF	10%	50V
2511 ©	4822 126 13838	100nF	10%	50V
2512 ©	4822 126 13838	100nF	10%	50V
2513	4822 124 40769	4,7µF	20%	100V
2514	4822 124 40769	4,7µF	20%	100V
2515 ©	5322 122 32531	100pF	5%	50V
2516 ©	5322 122 32531	100pF	5%	50V
2517 ©	4822 126 14585	100nF	10%	50V
2519 ©	5322 122 32531	100pF	5%	50V
2520 ©	5322 122 32531	100pF	5%	50V
2521	4822 124 40769	4,7µF	20%	100V
2522	4822 124 40769	4,7µF	20%	100V
2523 ©	5322 122 32658	22pF	5%	50V
2524 ©	5322 122 32658	22pF	5%	50V
2527 ©	5322 122 34099	470pF	10%	63V
2528 ©	5322 122 34099	470pF	10%	63V
2529 ©	4822 126 13838	100nF	10%	50V
2531 ©	5322 122 32654	22nF	10%	63V
2532	4822 124 40433	47µF	20%	25V
2533	4822 124 40769	4,7µF	20%	100V
2534	4822 124 40769	4,7µF	20%	100V
2535 ©	4822 122 32535	680pF		
2536 ©	4822 122 32535	680pF		
2537 ©	4822 126 13486	15pF	2%	63V
2538 ©	4822 126 13486	15pF	2%	63V
2539 ©	5322 122 32531	100pF	5%	50V
2540	4822 124 12245	220µF	20%	16V
2541	4822 124 21913	1µF	20%	63V
2542	4822 124 21913	1µF	20%	63V
2543 ©	4822 122 33127	2,2nF	10%	63V
2544 ©	4822 122 33127	2,2nF	10%	63V
2545 ©	4822 126 13838	100nF	10%	50V
2547 ©	5322 122 32448	10pF	5%	50V
2548 ©	5322 122 32448	10pF	5%	50V
2549	4822 124 40769	4,7µF	20%	100V
2550	4822 124 40769	4,7µF	20%	100V
2551 ©	4822 126 14585	100nF	10%	50V
2552	4822 124 41751	47µF	20%	16V
2553 ©	4822 126 13486	15pF	2%	63V
2560	5322 124 41948	0,47µF	20%	50V
2563	4822 124 40746	0,22µF	20%	63V
2564	4822 124 40746	0,22µF	20%	63V
2571	4822 121 42408	220nF	5%	63V
2572	4822 121 42408	220nF	5%	63V
2573	4822 121 51252	470nF	5%	63V
2574	4822 121 51252	470nF	5%	63V
2575	4822 121 51319	1µF	20%	50V
2576	4822 121 51319	1µF	20%	50V
2577 ©	4822 122 33127	2,2nF	10%	63V
2578 ©	4822 122 33127	2,2nF	10%	63V

CAPACITORS

2579 ©	5322 122 31647	1nF	10%	63V
2580 ©	5322 122 31647	1nF	10%	63V
2581 ©	4822 122 33127	2,2nF	10%	63V
2582	4822 124 40207	100µF	20%	25V
2583	4822 124 40207	100µF	20%	25V
2591	4822 124 80144	220µF	20%	25V
2592	4822 124 80144	220µF	20%	25V
2593	4822 124 40433	47µF	20%	25V
2594	4822 124 40433	47µF	20%	25V
2595 ©	5322 122 34099	470pF	10%	63V
2596 ©	5322 122 34099	470pF	10%	63V
2597 ©	4822 122 33575	220pF	5%	50V
2598 ©	4822 122 33575	220pF	5%	50V
2599	4822 124 41751	47µF	20%	16V
2601 ©	4822 126 12105	33nF	5%	63V
2602 ©	4822 126 12105	33nF	5%	63V
2603 ©	4822 122 33891	3,3nF	10%	63V
2604 ©	4822 122 33891	3,3nF	10%	63V
2605 ©	5322 122 34099	470pF	10%	63V
2606 ©	5322 122 34099	470pF	10%	63V
2607 ©	4822 126 14585	100nF	10%	50V
2608 ©	4822 126 14585	100nF	10%	50V
2609	4822 121 51252	470nF	5%	63V
2610	4822 121 51252	470nF	5%	63V
2611 ©	4822 126 10847	1,8nF	10%	50V
2612 ©	4822 126 10847	1,8nF	10%	50V
2613 ©	5322 122 31647	1nF	10%	63V
2614 ©	5322 122 31647	1nF	10%	63V
2615 ©	4822 122 33575	220pF	5%	50V
2616 ©	4822 122 33575	220pF	5%	50V
2617 ©	5322 122 34099	470pF	10%	63V
2618 ©	5322 122 34099	470pF	10%	63V
2619	4822 124 40769	4,7µF	20%	100V
2620	4822 124 40769	4,7µF	20%	100V
2621	4822 124 40207	100µF	20%	25V
2623 ©	4822 126 14043	1µF	20%	16V
2624 ©	4822 126 14043	1µF	20%	16V
2625 ©	4822 122 33575	220pF	5%	50V
2626 ©	4822 122 33575	220pF	5%	50V
2631	4822 124 40769	4,7µF	20%	100V
2632	4822 124 40769	4,7µF	20%	100V
2633 ©	5322 122 34099	470pF	10%	63V
2634 ©	5322 122 34099	470pF	10%	63V
2635 ©	5322 122 32531	100pF	5%	50V
2636 ©	5322 122 32531	100pF	5%	50V
2637 ©	4822 126 13692	47pF	1%	63V
2638 ©	4822 126 13692	47pF	1%	63V
2639 ©	5322 122 32654	22nF	10%	63V
2640	4822 124 40433	47µF	20%	25V
2641	4822 124 40207	100µF	20%	25V
2647	4822 124 81151	22µF	20%	50V
2648	4822 124 81151	22µF	20%	50V
2649 ©	5322 122 32531	100pF	5%	50V
2650 ©	5322 122 32531	100pF	5%	50V
2651 ©	5322 122 32654	22nF	10%	63V
2652 ©	5322 122 32654	22nF	10%	63V
2655	4822 124 40769	4,7µF	20%	100V
2661	4822 124 21913	1µF	20%	63V
2662 ©	5322 122 31647	1nF	10%	63V
2663 ©	5322 122 32448	10pF	5%	50V

ELECTRICAL PARTSLIST AF7 BOARD

CAPACITORS

2664	4822 124 21913	1µF	20%	63V
2665	4822 124 40248	10µF	20%	63V
2666	4822 124 40207	100µF	20%	25V
2668 ©	5322 122 34099	470pF	10%	63V
2669 ©	4822 126 13838	100nF	10%	50V
2670 ©	4822 126 13838	100nF	10%	50V
2671 ©	4822 126 13838	100nF	10%	50V
2672 ©	4822 126 13838	100nF	10%	50V
2673 ©	5322 122 32654	22nF	10%	63V
2674 ©	5322 122 32654	22nF	10%	63V
2675	5322 124 41948	0,47µF	20%	50V
2676	5322 124 41948	0,47µF	20%	50V
2677 ©	5322 122 34098	10nF	10%	50V
2681 ©	4822 126 14585	100nF	10%	50V
2682 ©	5322 122 34098	10nF10%50V		
2691 ©	5322 122 32654	22nF	10%	63V
2692 ©	5322 122 32654	22nF	10%	63V
2694 ©	4822 126 13838	100nF	10%	50V
2781 ©	5322 122 32654	22nF	10%	63V
2784 ©	5322 122 32531	100pF	5%	50V
2868 ©	4822 126 14585	100nF	10%	50V
2869 ©	4822 126 14043	1µF	20%	16V
2870 ©	4822 126 14043	1µF	20%	16V
2871 ©	5322 122 32654	22nF	10%	63V
2872 ©	5322 126 10223	4,7nF	10%	63V
2873 ©	5322 126 10223	4,7nF	10%	63V
2874 ©	5322 122 32654	22nF	10%	63V
2876	4822 124 80791	470µF	20%	16V

RESISTORS

3511 ©	4822 051 10102	1kΩ	2%	0,25W
3512 ©	4822 051 10102	1kΩ	2%	0,25W
3513	4822 116 52243	1,5kΩ	5%	0,16W
3514	4822 116 52243	1,5kΩ	5%	0,16W
3515 ©	4822 051 20471	470Ω	5%	0,1W
3516 ©	4822 051 20471	470Ω	5%	0,1W
3517 ©	4822 051 20332	3,3kΩ	5%	0,1W
3518 ©	4822 051 20332	3,3kΩ	5%	0,1W
3519 ©	4822 051 20333	33kΩ	5%	0,1W
3520 ©	4822 051 20333	33kΩ	5%	0,1W
3521 ©	4822 117 10965	18kΩ	2%	0,1W
3522 ©	4822 117 10965	18kΩ	2%	0,1W
3525 ©	4822 117 12955	2,7kΩ	1%	0,1W
3526 ©	4822 117 12955	2,7kΩ	1%	0,1W
3527 ©	4822 051 10102	1kΩ	2%	0,25W
3528 ©	4822 051 10102	1kΩ	2%	0,25W
3529 ©	4822 117 11449	2,2kΩ	1%	0,1W
3530 ©	4822 117 11449	2,2kΩ	1%	0,1W
3531 ©	4822 117 11449	2,2kΩ	1%	0,1W
3532 ©	4822 117 11449	2,2kΩ	1%	0,1W
3533	4822 116 52234	100kΩ	5%	0,5W
3534 ©	4822 117 10837	100kΩ	1%	0,1W
3535 ©	4822 051 20124	120kΩ	5%	0,1W
3536 ©	4822 051 20124	120kΩ	5%	0,1W
3537 ©	4822 051 20333	33kΩ	5%	0,1W
3538 ©	4822 051 20333	33kΩ	5%	0,1W
3539	4822 052 10339	33Ω	5%	NFR
3540 ©	4822 117 10833	10kΩ	1%	0,1W
3541 ©	4822 051 10102	1kΩ	2%	0,25W
3542 ©	4822 051 10102	1kΩ	2%	0,25W

RESISTORS

3543 ©	4822 051 20332	3,3kΩ	5%	0,1W
3544 ©	4822 051 20332	3,3kΩ	5%	0,1W
3545 ©	4822 117 11139	1,5kΩ	1%	0,1W
3546 ©	4822 117 11139	1,5kΩ	1%	0,1W
3547 ©	4822 117 10965	18kΩ	2%	0,1W
3548 ©	4822 117 10965	18kΩ	2%	0,1W
3550 ©	4822 117 10834	47kΩ	1%	0,1W
3551 ©	4822 051 20154	150kΩ	5%	0,1W
3552 ©	4822 051 20154	150kΩ	5%	0,1W
3553 ©	4822 051 20334	330kΩ	5%	0,1W
3554 ©	4822 117 10353	150Ω	5%	0,1W
3555 ©	4822 051 20391	390Ω	5%	0,1W
3556 ©	4822 051 20122	1,2kΩ	5%	0,1W
3557 ©	4822 117 11149	82kΩ	1%	0,1W
3558	4822 053 20225	2,2MΩ	5%	0,25W
3559 ©	4822 051 20225	2,2MΩ	5%	0,1W
3560 ©	4822 051 20475	4,7MΩ	5%	0,1W
3563 ©	4822 117 12955	2,7kΩ	1%	0,1W
3564 ©	4822 117 12955	2,7kΩ	1%	0,1W
3565 ©	4822 051 20472	4,7kΩ	5%	0,1W
3566 ©	4822 051 20472	4,7kΩ	5%	0,1W
3569 ©	4822 051 20472	4,7kΩ	5%	0,1W
3570 ©	4822 051 20472	4,7kΩ	5%	0,1W
3571 ©	4822 051 20472	4,7kΩ	5%	0,1W
3572 ©	4822 051 20472	4,7kΩ	5%	0,1W
3573 ©	4822 051 20472	4,7kΩ	5%	0,1W
3574 ©	4822 051 20472	4,7kΩ	5%	0,1W
3575 ©	4822 117 11503	220Ω	5%	0,1W
3576	4822 116 83872	220Ω	5%	0,5W
3577 ©	4822 051 20471	470Ω	5%	0,1W
3578 ©	4822 051 20471	470Ω	5%	0,1W
3579	4822 052 10478	4,7Ω	5%	NFR
3580 ©	4822 117 12955	2,7kΩ	1%	0,1W
3581 ©	4822 117 11449	2,2kΩ	1%	0,1W
3582 ©	4822 117 11449	2,2kΩ	1%	0,1W
3583 ©	4822 117 11503	220Ω	5%	0,1W
3584 ©	4822 117 11503	220Ω	5%	0,1W
3585 ©	4822 117 10834	47kΩ	1%	0,1W
3586 ©	4822 117 10834	47kΩ	1%	0,1W
3587 ©	4822 051 20154	150kΩ	5%	0,1W
3588 ©	4822 051 20154	150kΩ	5%	0,1W
3589 ©	4822 117 11449	2,2kΩ	1%	0,1W
3590 ©	4822 117 11449	2,2kΩ	1%	0,1W
3591 ©	4822 051 20223	22kΩ	5%	0,1W
3592 ©	4822 051 20223	22kΩ	5%	0,1W
3593	4822 116 52264	27kΩ	5%	0,5W
3594 ©	4822 051 20273	27kΩ	5%	0,1W
3595 ©	4822 051 20333	33kΩ	5%	0,1W
3596 ©	4822 117 10837	100kΩ	1%	0,1W
3597 ©	4822 051 20105	1MΩ	5%	0,1W
3598 ©	4822 051 20475	4,7MΩ	5%	0,1W
3599	4822 116 52175	100Ω	5%	0,5W
3601 ©	4822 051 20332	3,3kΩ	5%	0,1W
3602 ©	4822 051 20332	3,3kΩ	5%	0,1W
3603 ©	4822 051 20684	680kΩ	5%	0,1W
3604 ©	4822 051 20684	680kΩ	5%	0,1W
3605 ©	4822 117 13579	220kΩ	1%	0.1W
3606 ©	4822 117 13579	220kΩ	1%	0.1W
3607	4822 050 21003	10kΩ	2%	0,25W
3608	4822 050 21003	10kΩ	2%	0,25W

ELECTRICAL PARTSLIST AF7 BOARD

RESISTORS

3609 ©	4822 117 10833	10kΩ	1%	0,1W
3610 ©	4822 117 10833	10kΩ	1%	0,1W
3611 ©	4822 051 20562	5,6kΩ	5%	0,1W
3612 ©	4822 051 20562	5,6kΩ	5%	0,1W
3613 ©	4822 051 20562	5,6kΩ	5%	0,1W
3614 ©	4822 051 20562	5,6kΩ	5%	0,1W
3615 ©	4822 051 20562	5,6kΩ	5%	0,1W
3616 ©	4822 051 20562	5,6kΩ	5%	0,1W
3617 ©	4822 051 20822	8,2kΩ	5%	0,1W
3618 ©	4822 051 20822	8,2kΩ	5%	0,1W
3619 ©	4822 051 20822	8,2kΩ	5%	0,1W
3620 ©	4822 051 20822	8,2kΩ	5%	0,1W
3621 ©	4822 051 20822	8,2kΩ	5%	0,1W
3622 ©	4822 051 20822	8,2kΩ	5%	0,1W
3623 ©	4822 117 10834	47kΩ	1%	0,1W
3624 ©	4822 117 10834	47kΩ	1%	0,1W
3625 ©	4822 051 10102	1kΩ	2%	0,25W
3626 ©	4822 051 10102	1kΩ	2%	0,25W
3627 ©	4822 117 11503	220Ω	5%	0,1W
3628 ©	4822 117 11503	220Ω	5%	0,1W
3629 ©	4822 117 11454	820Ω	1%	
3631 ©	4822 117 11454	820Ω	1%	
3632	4822 116 52231	820Ω	5%	0,5W
3633 ©	4822 051 20562	5,6kΩ	5%	0,1W
3634 ©	4822 051 20562	5,6kΩ	5%	0,1W
3635 ©	4822 117 10833	10kΩ	1%	0,1W
3636 ©	4822 117 10833	10kΩ	1%	0,1W
3637 ©	4822 117 10834	47kΩ	1%	0,1W
3638 ©	4822 117 10834	47kΩ	1%	0,1W
3639 ©	4822 117 11507	6,8kΩ	1%	0,1W
3640 ©	4822 117 11507	6,8kΩ	1%	0,1W
3641 ⚠	4822 052 10109	10Ω	5%	NFR
3642 ©	4822 051 20472	4,7kΩ	5%	0,1W
3643 ©	4822 051 20472	4,7kΩ	5%	0,1W
3645 ©	4822 051 20479	47Ω	5%	0,1W
3646 ©	4822 051 20479	47Ω	5%	0,1W
3647 ©	4822 051 20479	47Ω	5%	0,1W
3648 ©	4822 051 20479	47Ω	5%	0,1W
3649 ©	4822 051 20479	47Ω	5%	0,1W
3650 ©	4822 051 20479	47Ω	5%	0,1W
3651 ©	4822 051 20392	3,9kΩ	5%	0,1W
3652 ©	4822 051 20392	3,9kΩ	5%	0,1W
3655	4822 050 21003	10kΩ	2%	0,25W
3656 ©	4822 117 10833	10kΩ	1%	0,1W
3657 ©	4822 051 10102	1kΩ	2%	0,25W
3658 ©	4822 051 20562	5,6kΩ	5%	0,1W
3660 ©	4822 051 20472	4,7kΩ	5%	0,1W
3661	4822 053 20475	4,7MΩ	5%	0,25W
3662 ©	4822 051 10102	1kΩ	2%	0,25W
3663 ©	4822 051 10102	1kΩ	2%	0,25W
3667 ©	4822 051 20392	3,9kΩ	5%	0,1W
3668 ©	4822 051 20392	3,9kΩ	5%	0,1W
3671 ©	4822 117 13579	220kΩ	1%	0.1W
3672 ©	4822 117 13579	220kΩ	1%	0.1W
3673 ©	4822 117 12955	2,7kΩ	1%	0.1W
3674 ©	4822 051 20334	330kΩ	5%	0,1W
3675 ©	4822 051 20392	3,9kΩ	5%	0,1W
3676 ©	4822 051 20101	100Ω	5%	0,1W
3677 ©	4822 051 20471	470Ω	5%	0,1W
3678 ©	4822 117 13579	220kΩ	1%	0.1W

RESISTORS

3679 ©	4822 051 20391	390Ω	5%	0,1W
3680 ©	4822 051 20471	470Ω	5%	0,1W
3681	4822 052 10229	22Ω	5%	0,33W
3682 ©	4822 051 10102	1kΩ	2%	0,25W
3683 ©	4822 051 20471	470Ω	5%	0,1W
3684 ©	4822 051 20392	3,9kΩ	5%	0,1W
3686 ©	4822 117 11383	12kΩ	1%	0,1W
3687 ©	4822 117 11383	12kΩ	1%	0,1W
3688 ©	4822 051 20471	470Ω	5%	0,1W
3689 ©	4822 051 20471	470Ω	5%	0,1W
3690 ©	4822 051 20109	10Ω	5%	0,1W
3691 ©	4822 051 20109	10Ω	5%	0,1W
3692 ©	4822 117 10833	10kΩ	1%	0,1W
3693 ©	4822 051 20562	5,6kΩ	5%	0,1W
3694 ©	4822 051 20562	5,6kΩ	5%	0,1W
3695	4822 116 81154	2,2Ω	5%	0,5W
3696 ©	4822 117 11449	2,2kΩ	1%	0,1W
3697	4822 116 83883	470Ω	5%	0,16W
3698	4822 116 83883	470Ω	5%	0,16W
3699	4822 050 11002	1kΩ	5%	0,2W
3773	4822 050 11002	1kΩ	5%	0,2W
4516 ©	4822 051 20008	CHIP JUMPER 0805		
4517 ©	4822 051 20008	CHIP JUMPER 0805		
4518 ©	4822 051 20008	CHIP JUMPER 0805		
4519 ©	4822 051 20008	CHIP JUMPER 0805		
4520 ©	4822 051 20008	CHIP JUMPER 0805		
4521 ©	4822 051 20008	CHIP JUMPER 0805		
4522 ©	4822 051 20008	CHIP JUMPER 0805		
4524 ©	4822 051 20008	CHIP JUMPER 0805		
4525 ©	4822 051 20008	CHIP JUMPER 0805		
4526 ©	4822 051 20008	CHIP JUMPER 0805		
4527 ©	4822 051 20008	CHIP JUMPER 0805		
4528 ©	4822 051 20008	CHIP JUMPER 0805		
4529 ©	4822 051 20008	CHIP JUMPER 0805		
4531 ©	4822 051 20008	CHIP JUMPER 0805		
4532 ©	4822 051 20008	CHIP JUMPER 0805		
4533 ©	4822 051 20008	CHIP JUMPER 0805		
4534 ©	4822 051 20008	CHIP JUMPER 0805		
4535 ©	4822 051 20008	CHIP JUMPER 0805		
4536 ©	4822 051 20008	CHIP JUMPER 0805		
4537 ©	4822 051 20008	CHIP JUMPER 0805		
4538 ©	4822 051 20008	CHIP JUMPER 0805		
4540 ©	4822 051 20008	CHIP JUMPER 0805		
4541 ©	4822 051 20008	CHIP JUMPER 0805		
4542 ©	4822 051 20008	CHIP JUMPER 0805		
4543 ©	4822 051 20008	CHIP JUMPER 0805		
4544 ©	4822 051 20008	CHIP JUMPER 0805		
4545 ©	4822 051 20008	CHIP JUMPER 0805		
4546 ©	4822 051 20008	CHIP JUMPER 0805		
4547 ©	4822 051 20008	CHIP JUMPER 0805		
4548 ©	4822 051 20008	CHIP JUMPER 0805		
4549 ©	4822 051 20008	CHIP JUMPER 0805		
4550 ©	4822 051 20008	CHIP JUMPER 0805		
4551 ©	4822 051 20008	CHIP JUMPER 0805		
4552 ©	4822 051 20008	CHIP JUMPER 0805		
4553 ©	4822 051 20008	CHIP JUMPER 0805		
4554 ©	4822 051 20008	CHIP JUMPER 0805		
4555 ©	4822 051 20008	CHIP JUMPER 0805		
4556 ©	4822 051 20008	CHIP JUMPER 0805		
4557 ©	4822 051 20008	CHIP JUMPER 0805		

ELECTRICAL PARTSLIST AF7 BOARD

RESISTORS

4558 ©	4822 051 20008	CHIP JUMPER 0805
4559 ©	4822 051 20008	CHIP JUMPER 0805
4560 ©	4822 051 20008	CHIP JUMPER 0805
4561 ©	4822 051 20008	CHIP JUMPER 0805
4562 ©	4822 051 20008	CHIP JUMPER 0805
4563 ©	4822 051 20008	CHIP JUMPER 0805
4564 ©	4822 051 20008	CHIP JUMPER 0805
4565 ©	4822 051 20008	CHIP JUMPER 0805
4567 ©	4822 051 20008	CHIP JUMPER 0805
4568 ©	4822 051 20008	CHIP JUMPER 0805
4569 ©	4822 051 20008	CHIP JUMPER 0805
4570 ©	4822 051 20008	CHIP JUMPER 0805
4571 ©	4822 051 20008	CHIP JUMPER 0805
4572 ©	4822 051 20008	CHIP JUMPER 0805
4573 ©	4822 051 20008	CHIP JUMPER 0805
4574 ©	4822 051 20008	CHIP JUMPER 0805
4575 ©	4822 051 20008	CHIP JUMPER 0805
4576 ©	4822 051 20008	CHIP JUMPER 0805
4577 ©	4822 051 20008	CHIP JUMPER 0805
4579 ©	4822 051 20008	CHIP JUMPER 0805
4580 ©	4822 051 20008	CHIP JUMPER 0805
4581 ©	4822 051 20008	CHIP JUMPER 0805
4582 ©	4822 051 20008	CHIP JUMPER 0805
4583 ©	4822 051 20008	CHIP JUMPER 0805
4585 ©	4822 051 20008	CHIP JUMPER 0805
4586 ©	4822 051 20008	CHIP JUMPER 0805
4587 ©	4822 051 20008	CHIP JUMPER 0805
4588 ©	4822 051 20008	CHIP JUMPER 0805
4589 ©	4822 051 20008	CHIP JUMPER 0805
4591 ©	4822 051 20008	CHIP JUMPER 0805
4592 ©	4822 051 20008	CHIP JUMPER 0805
4593 ©	4822 051 20008	CHIP JUMPER 0805
4595 ©	4822 051 20008	CHIP JUMPER 0805
4597 ©	4822 051 20008	CHIP JUMPER 0805
4599 ©	4822 051 20008	CHIP JUMPER 0805
4600 ©	4822 051 20008	CHIP JUMPER 0805
4601 ©	4822 051 20008	CHIP JUMPER 0805
4602 ©	4822 051 20008	CHIP JUMPER 0805
4603 ©	4822 051 20008	CHIP JUMPER 0805
4605 ©	4822 051 20008	CHIP JUMPER 0805
4606 ©	4822 051 20008	CHIP JUMPER 0805
4607 ©	4822 051 20008	CHIP JUMPER 0805
4608 ©	4822 051 20008	CHIP JUMPER 0805
4609 ©	4822 051 20008	CHIP JUMPER 0805
4611 ©	4822 051 20008	CHIP JUMPER 0805
4612 ©	4822 051 20008	CHIP JUMPER 0805
4613 ©	4822 051 20008	CHIP JUMPER 0805
4614 ©	4822 051 20008	CHIP JUMPER 0805
4615 ©	4822 051 20008	CHIP JUMPER 0805
4618 ©	4822 051 20008	CHIP JUMPER 0805
4619 ©	4822 051 20008	CHIP JUMPER 0805
4620 ©	4822 051 20008	CHIP JUMPER 0805
4621 ©	4822 051 20008	CHIP JUMPER 0805
4622 ©	4822 051 20008	CHIP JUMPER 0805
4623 ©	4822 051 20008	CHIP JUMPER 0805
4624 ©	4822 051 20008	CHIP JUMPER 0805
4625 ©	4822 051 20008	CHIP JUMPER 0805
4626 ©	4822 051 20008	CHIP JUMPER 0805
4627 ©	4822 051 20008	CHIP JUMPER 0805
4629 ©	4822 051 20008	CHIP JUMPER 0805

RESISTORS

4630 ©	4822 051 20008	CHIP JUMPER 0805
4715 ©	4822 051 20008	CHIP JUMPER 0805
4716 ©	4822 051 20008	CHIP JUMPER 0805

COILS

5511	4822 157 62552	2,2µH
5523	4822 157 62552	2,2µH
5531	4822 157 62552	2,2µH
5532	4822 157 62552	2,2µH

DIODES

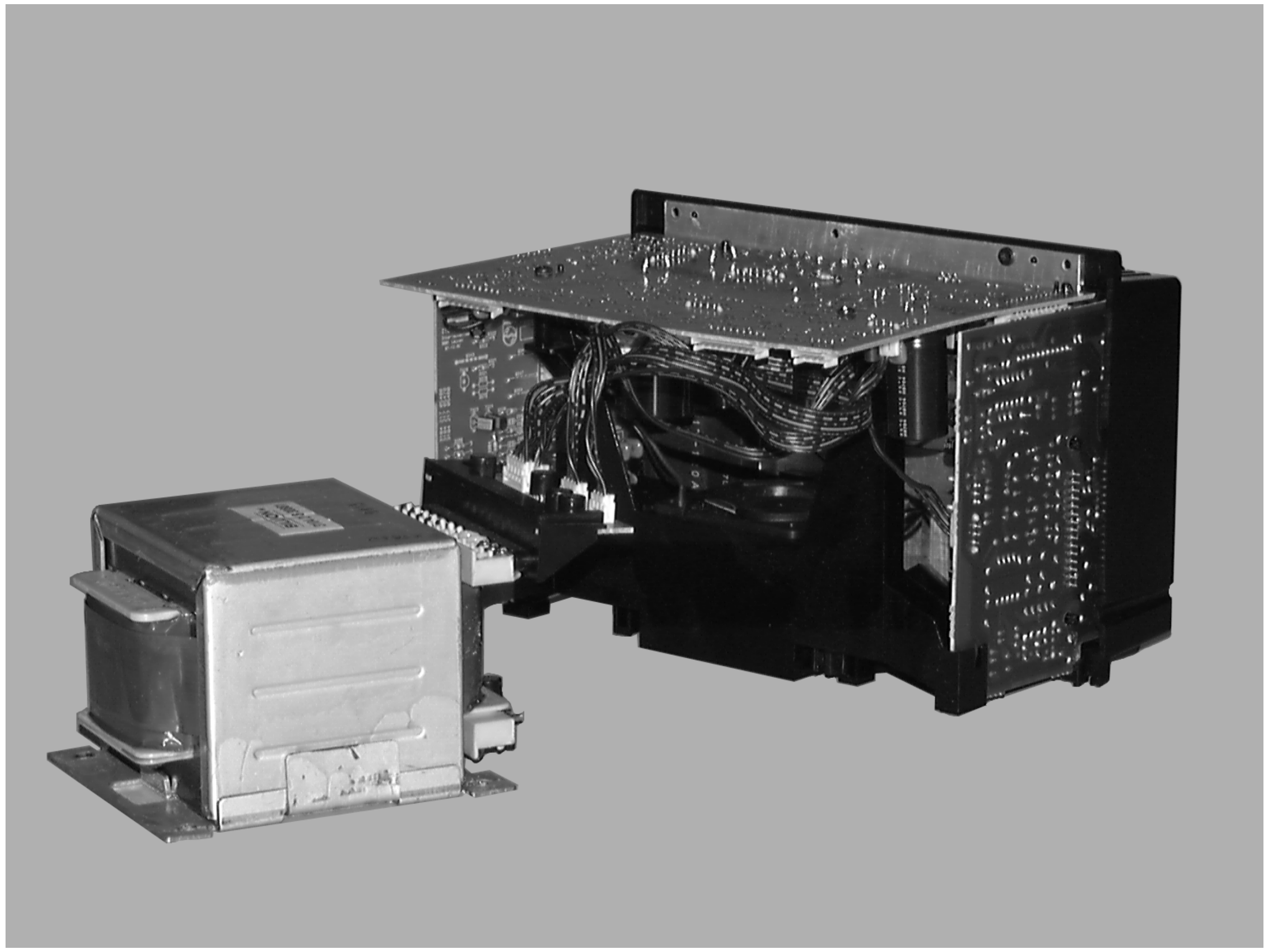
6512	4822 130 30862	BZX79-C9V1
6514	4822 130 31878	1N4003G
6515	4822 130 30621	1N4148
6516	4822 130 30621	1N4148
6531	4822 130 30621	1N4148

TRANSISTORS

7521 ©	4822 130 60511	BC847B
7522 ©	4822 130 60511	BC847B
7523 ©	4822 130 60511	BC847B
7524 ©	4822 130 60511	BC847B
7525	4822 130 40959	BC547B
7526 ©	4822 130 60373	BC856B
7527 ©	4822 130 60511	BC847B
7528 ©	4822 130 60511	BC847B
7529 ©	4822 130 60373	BC856B
7531 ©	4822 130 60511	BC847B
7532 ©	4822 130 60511	BC847B
7533 ©	4822 130 60511	BC847B
7534 ©	4822 130 60511	BC847B
7535 ©	4822 130 42804	BC817-25
7536 ©	4822 130 42804	BC817-25
7537 ©	4822 130 60511	BC847B
7538 ©	4822 130 60511	BC847B
7539 ©	4822 130 60373	BC856B
7541 ©	4822 130 60511	BC847B
7542 ©	4822 130 60511	BC847B
7543 ©	4822 130 42804	BC817-25
7552	4822 130 41246	BC327-25
7553 ©	4822 130 60511	BC847B

INTEGRATED CIRCUITS

7511 ©	4822 209 17386	TDA7437T, Selector&Sound processor
7512 ©	4822 209 83357	NJM4560M, 2-FOLD OP-AMP.
7513 ©	4822 209 83357	NJM4560M, 2-FOLD OP-AMP.
7515 ©	4822 209 31378	NJM4556M, 2-FOLD OP-AMP.
7551 ©	4822 209 17345	M62320FP, I2C SHIFT REGISTER



POWER 5-VA Module

(70 / 100W Version)

Stage .6

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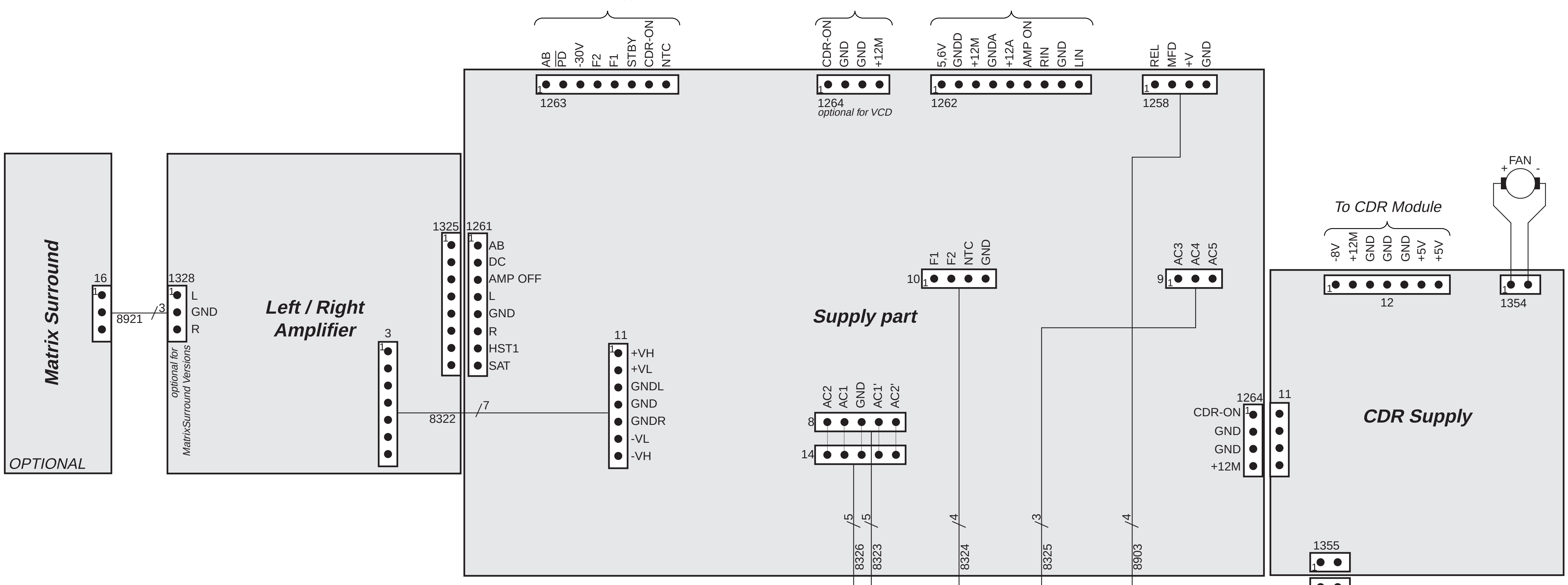
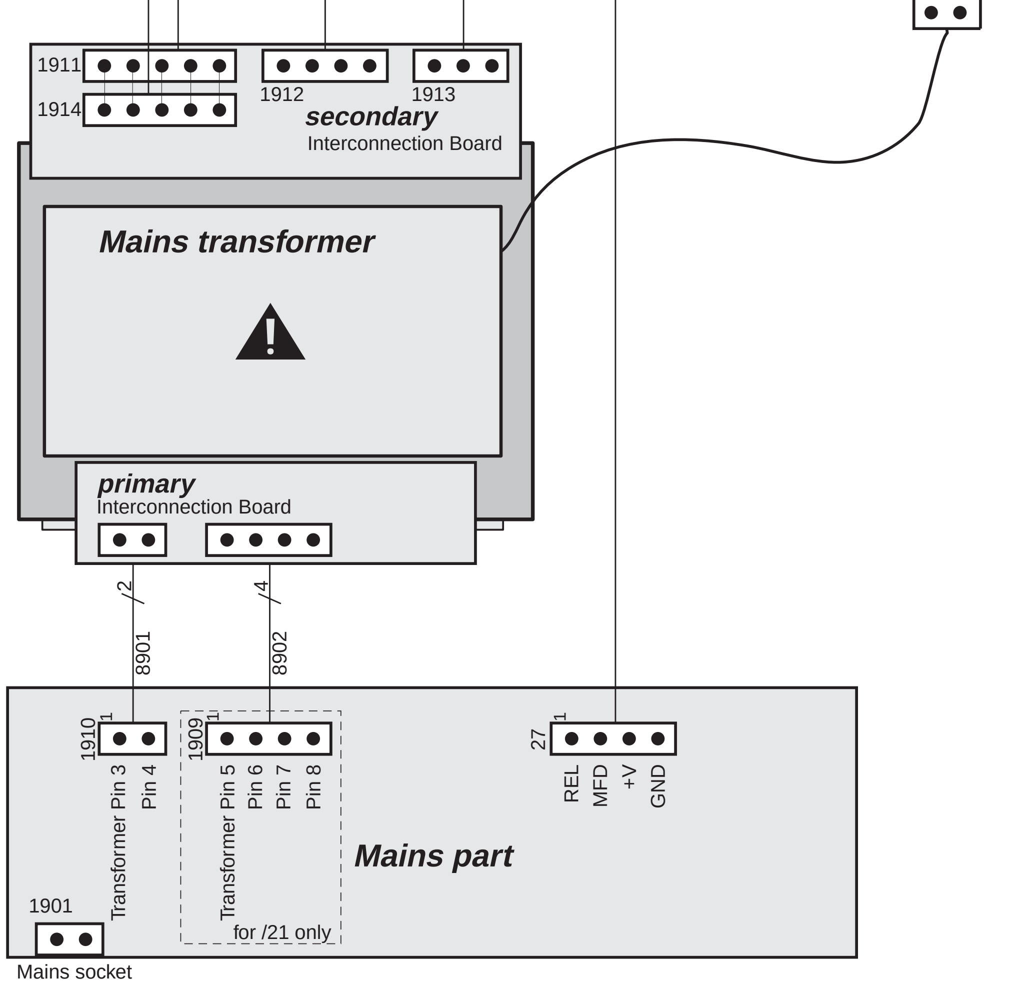
Partslist 9-11ff

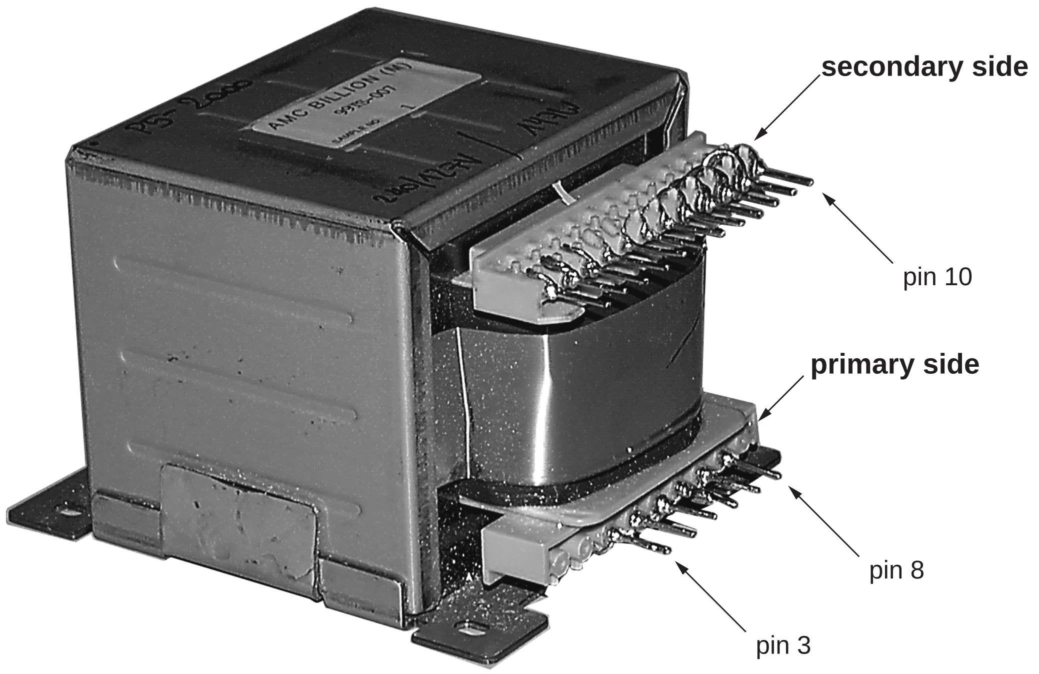
Technical remarks

WIRING DIAGRAM POWER5-VA MODULE


To AF Board
AB PD -30V F2 F1 STBY CDR-ON NTC
1263
To CDR Module
CDR-ON GND GND +12M
1264
optional for VCD
To AF Board
5,6V GNDD +12M GNDA +12A AMP ON RIN GND LIN
1262
REL MFD +V GND
1258
FAN
+ -
To CDR Module
-8V +12M GND GND GND +5V +5V
12
1354
Matrix Surround
OPTIONAL
16
8921
3
1328
L
GND
R
optional for MatrixSurround Versions
Left / Right Amplifier
1325
1261
AB
DC
AMP OFF
L
GND
R
HST1
SAT
3
8322
7
11
+VH
+VL
GNDL
GND
GNDR
-VL
-VH
Supply part
F1 F2 NTC GND
10
AC3 AC4 AC5
9
AC2 AC1 GND AC1' AC2'
8
14
1264
CDR-ON
GND
GND
+12M
11
CDR Supply
5 5 4 3 4
8326 8323 8324 8325 8903
1355

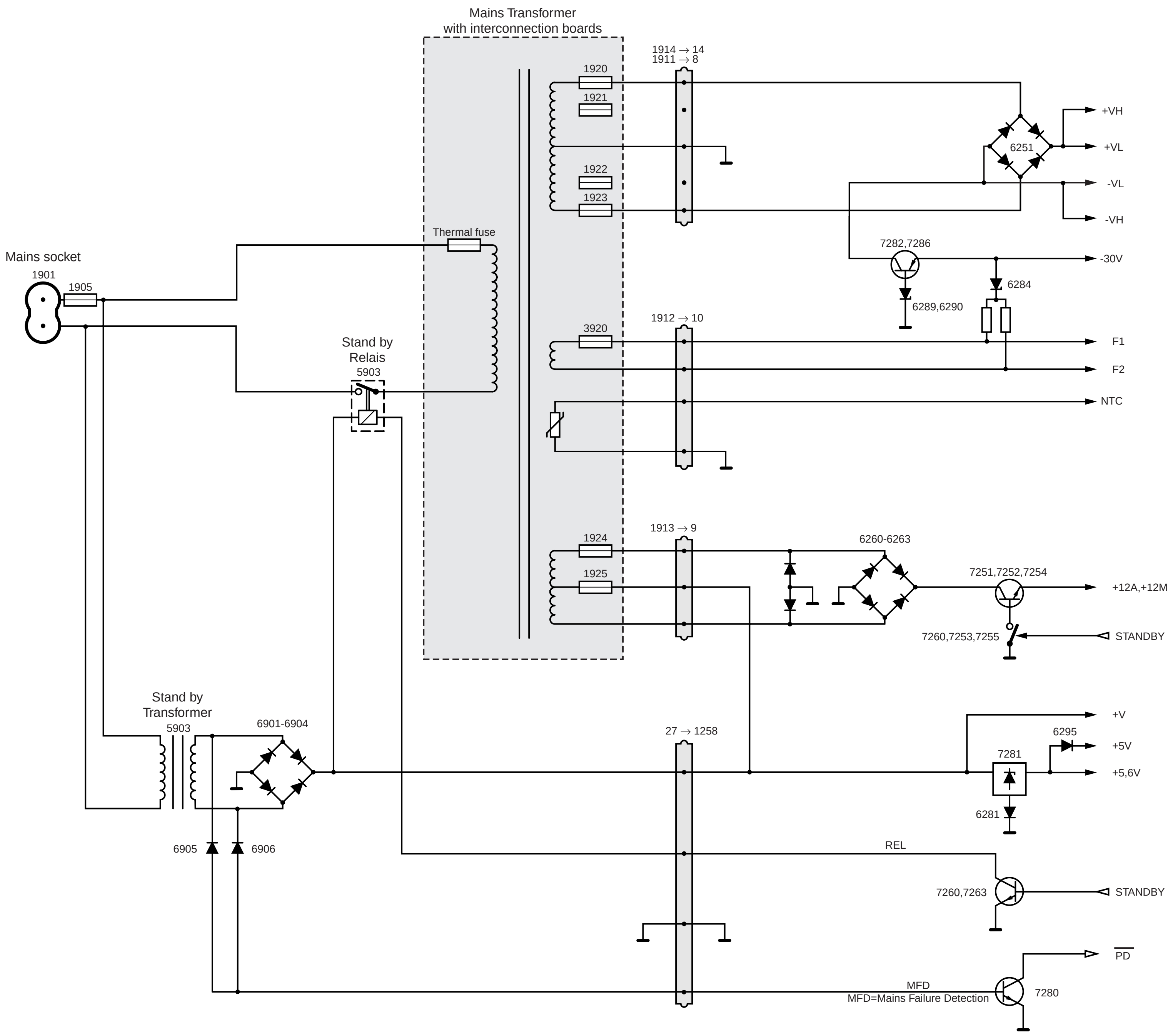

1911
1914
1912
1913
secondary
Interconnection Board
Mains transformer
primary
Interconnection Board
2
4
8901
8902
1910
Transformer Pin 3
Pin 4
1909
Transformer Pin 5
Pin 6
Pin 7
Pin 8
for /21 only
27
REL
MFD
+V
GND
Mains part
1901
Mains socket

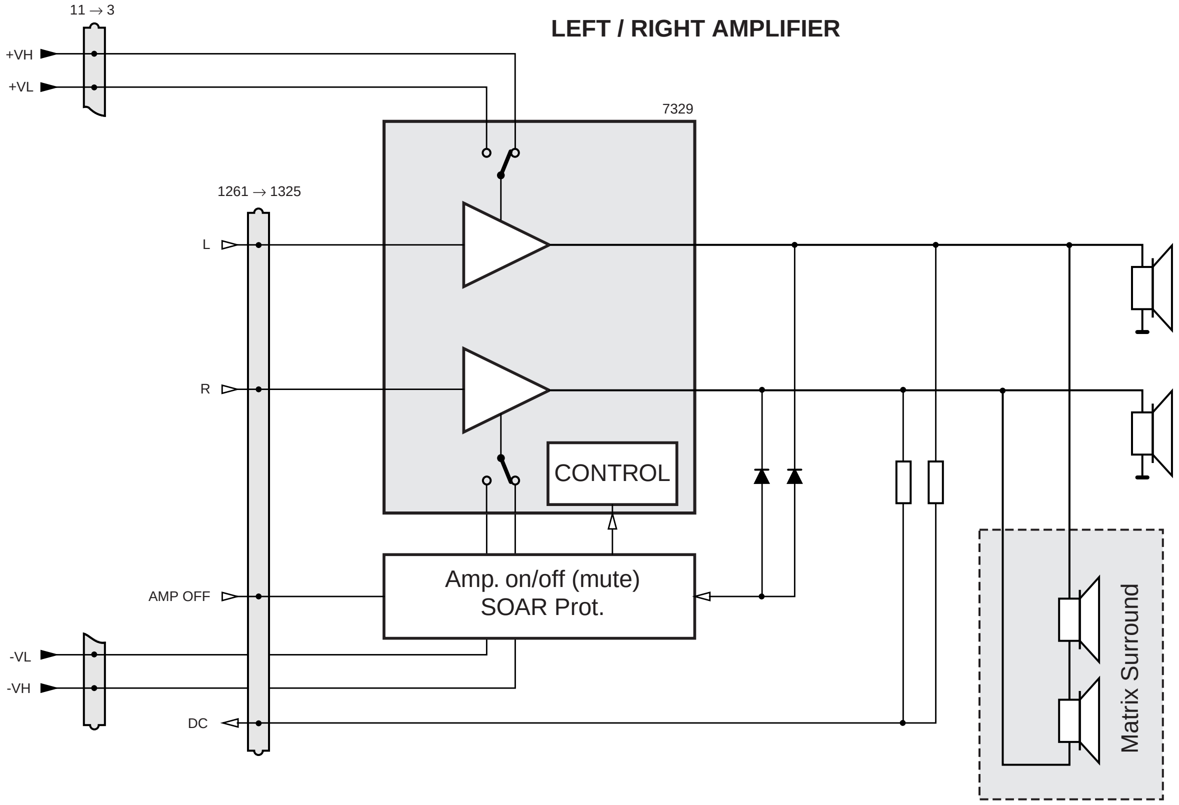
Mains Transformer /21


secondary side
pin 10
primary side
pin 8
pin 3

Pos.	Service code	Description
5001	3103 308 30510	MAINS TRANSFORMER /22
5001	3103 308 30520	MAINS TRANSFORMER /21
5001	3103 308 30530	MAINS TRANSFORMER /37

BLOCK DIAGRAM 70/100W VERSION


SUPPLY PART
Mains Transformer
with interconnection boards
1920
1921
1922
1923
Thermal fuse
3920
1924
1925
1914 → 14
1911 → 8
1912 → 10
1913 → 9
6251
+VH
+VL
-VL
-VH
7282,7286
-30V
6284
6289,6290
F1
F2
NTC
6260-6263
7251,7252,7254
+12A,+12M
7260,7253,7255
STANDBY
Mains socket
1901
1905
Stand by
Relais
5903
Stand by
Transformer
5903
6901-6904
6905
6906
27 → 1258
+V
6295
+5V
7281
+5,6V
6281
REL
7260,7263
STANDBY
PD
MFD
MFD=Mains Failure Detection
7280


LEFT / RIGHT AMPLIFIER
11 → 3
+VH
+VL
7329
1261 → 1325
L
R
CONTROL
AMP OFF
Amp. on/off (mute)
SOAR Prot.
-VL
-VH
DC
Matrix Surround

COMPONENT LAYOUT SUPPLY PART & L/R AMPLIFIER PART

3	C	2
8	D	9
9	B	13
10	B	10
11	D	8
14	D	9
16	A	4
1258	A	13
1261	C	6
1262	A	12
1263	A	7
1264	A	10
1265	C	9
1268	D	13
1280	C	7
1290	E	11
1291	C	9
1321	D	6
1322	B	6
1323	B	6
1324	B	6
1325	B	2
1326	B	1
1327	A	4
1328	E	4
2251	D	10
2252	E	10
2253	D	10
2254	D	9
2255	E	9
2256	D	9
2257	D	8
2258	C	8
2259	D	10
2260	D	11
2261	C	11
2262	C	11
2263	B	13
2264	D	13
2265	C	13
2266	C	13
2267	D	12
2268	C	12
2269	C	12
2270	B	9
2271	A	12
2279	D	12
2280	C	12
2281	C	12
2282	D	11
2283	A	11
2284	C	8
2285	B	9
2286	A	10
2287	B	9
2288	A	13
2289	A	13
2290	D	7
2295	C	12
2300	B	7
2301	B	8
2302	A	9
2303	A	7
2321	E	3
2322	E	3
2323	E	2
2324	E	2
2325	D	4
2326	E	4
2327	E	3
2328	E	3
2329	D	4
2330	E	4
2331	C	2
2333	E	3
2334	E	3
2335	E	3
2336	E	3
2337	E	3
2338	E	3
2339	B	3
2340	C	3
2341	D	2
2342	C	2
2343	D	1
2344	D	3
2345	D	2
2346	C	4
2347	C	4
2348	C	4
2349	C	4
2350	D	4
2351	D	4
2352	E	2
2353	C	5
2354	D	5
2355	C	6
2356	D	6
2357	A	5
2359	A	5
2360	B	5
2361	B	1
2362	B	1
2363	D	3
2364	D	3
2365	D	2
2366	C	5
2367	D	3
2368	C	4
2369	C	4
3248	A	11
3249	A	11
3250	A	11
3251	D	13
3252	D	12
3253	A	13
3254	B	7
3255	E	13
3256	B	13
3257	E	12
3258	E	12
3259	A	12
3260	C	12
3261	C	11
3262	C	12
3263	B	12
3265	B	12
3266	A	8
3267	A	8
3268	A	10
3269	B	10
3270	C	12
3271	D	7
3272	E	13
3273	B	8
3274	E	8
3275	D	8
3278	D	13
3279	E	12
3280	A	13
3281	C	12
3282	C	7
3283	D	11
3284	D	11
3285	B	9
3286	B	10
3287	B	11
3288	B	10
3289	B	10
3290	E	8
3295	D	7
3296	E	8
3298	D	7
3299	D	7
3300	D	7
3301	B	7
3302	B	7
3303	E	13
3304	B	9
3305	C	9
3306	A	8
3307	C	5
3308	A	10
3309	B	7
3310	A	9
3311	A	10
3312	B	9
3313	B	12
3315	A	8
3316	A	8
3317	A	13
3318	A	9
3319	A	7
3320	A	7
3321	B	1
3322	B	1
3323	E	1
3324	E	2
3325	E	2
3326	E	3
3327	E	3
3328	E	3
3329	D	4
3330	E	3
3331	E	3
3332	E	3
3333	D	2
3334	D	2
3335	D	2
3336	C	2
3337	D	2
3338	C	2
3339	D	2
3340	C	2
3341	D	3
3342	C	3
3343	D	3
3344	C	3
3345	E	1
3346	E	1
3347	E	1
3348	E	1
3350	D	2
3351	D	2
3352	D	1
3353	D	1
3355	C	3
3356	C	3
3357	E	1
3358	E	2
3359	C	6
3360	E	6
3363	C	5
3364	D	5
3365	D	5
3366	D	5
3367	D	1
3368	C	1
3369	B	5
3370	E	5
3371	E	3
3372	E	3
3373	C	1
3376	C	1
3377	B	5
3378	B	5
3379	B	5
3380	B	5
3381	A	4
3383	D	1
3384	D	1
3385	C	5
3386	D	5
3387	D	6
3388	D	6
3389	E	5
3391	D	4
3392	E	4
5321	C	5
5322	E	5
5323	C	5
5324	E	5
6251	E	10
6252	B	13
6253	B	13
6255	E	9
6260	D	13
6261	D	13
6262	C	13
6263	C	13
6264	C	11
6265	A	13
6267	A	13
6269	B	11
6270	B	12
6271	C	12
6272	A	10
6281	E	12
6283	B	11
6284	B	10
6285	B	8
6286	B	8
6287	B	8
6288	B	8
6289	B	10
6290	B	10
6292	D	7
6293	B	12
6294	B	13
6295	A	10
6296	A	9
6297	A	9
6298	B	7
6299	B	7
6301	B	11
6302	B	7
6325	C	3
6326	C	4
6327	B	4
6328	C	3
6329	B	4
6330	C	3
6333	E	4
6334	E	4
6335	E	4
6336	E	4
6337	D	1
6339	D	1
6360	D	5
7251	E	13
7252	C	12
7253	A	8
7254	D	12
7255	C	12
7260	A	8
7262	B	13
7263	A	13
7265	A	7
7266	B	7
7268	A	7
7280	A	12
7281	E	11
7282	B	10
7283	A	10
7284	A	11
7285	A	11
7286	B	9
7290	D	7
7292	E	12
7323	C	1
7324	C	1
7325	E	1
7326	E	2
7327	D	1
7328	C	1
7329	D	4
7330	C	4
7350	D	2
8327	E	4
8328	C	9
9251	E	9
9252	E	8
9253	E	12
9254	C	7
9255	B	7
9256	E	12
9258	A	7
9259	B	9
9260	A	10
9261	A	12
9262	A	8
9263	A	11
9264	A	11
9265	E	12
9266	E	12
9267	E	12
9268	E	13
9269	E	12
9270	A	10
9271	E	11
9272	A	11
9273	E	12
9274	A	13
9275	C	10
9276	D	9
9277	B	11
9278	E	9
9279	E	10
9280	D	10
9281	D	10
9284	C	12
9285	C	12
9286	C	9
9287	C	10
9288	D	10
9289	B	11
9290	C	10
9291	C	9
9292	C	11
9293	A	9
9294	A	10
9298	E	8
9299	B	12
9300	B	12
9302	A	11
9303	B	11
9304	B	12
9305	A	10
9306	B	12
9307	B	10
9308	C	9
9309	B	8
9312	A	9
9313	A	8
9314	A	9
9315	B	9
9316	D	13
9319	C	6
9320	E	6
9321	B	1
9322	B	1
9323	B	3
9324	C	3
9325	C	3
9326	C	3
9327	D	3
9328	C	2
9329	C	3
9330	E	5
9331	C	5
9332	B	5
9333	B	5
9335	E	4
9336	E	3
9337	E	3
9338	E	4
9340	C	3
9342	D	5
9343	B	1
9344	D	3
9345	C	4
9347	C	2
9348	B	5
9349	B	2
9350	C	2
9351	D	5
9353	C	5
9354	C	2
9355	B	5
9356	D	5
9357	D	5
9358	E	4
9359	E	4
9360	A	2
9361	A	2
9362	A	2
9363	A	2
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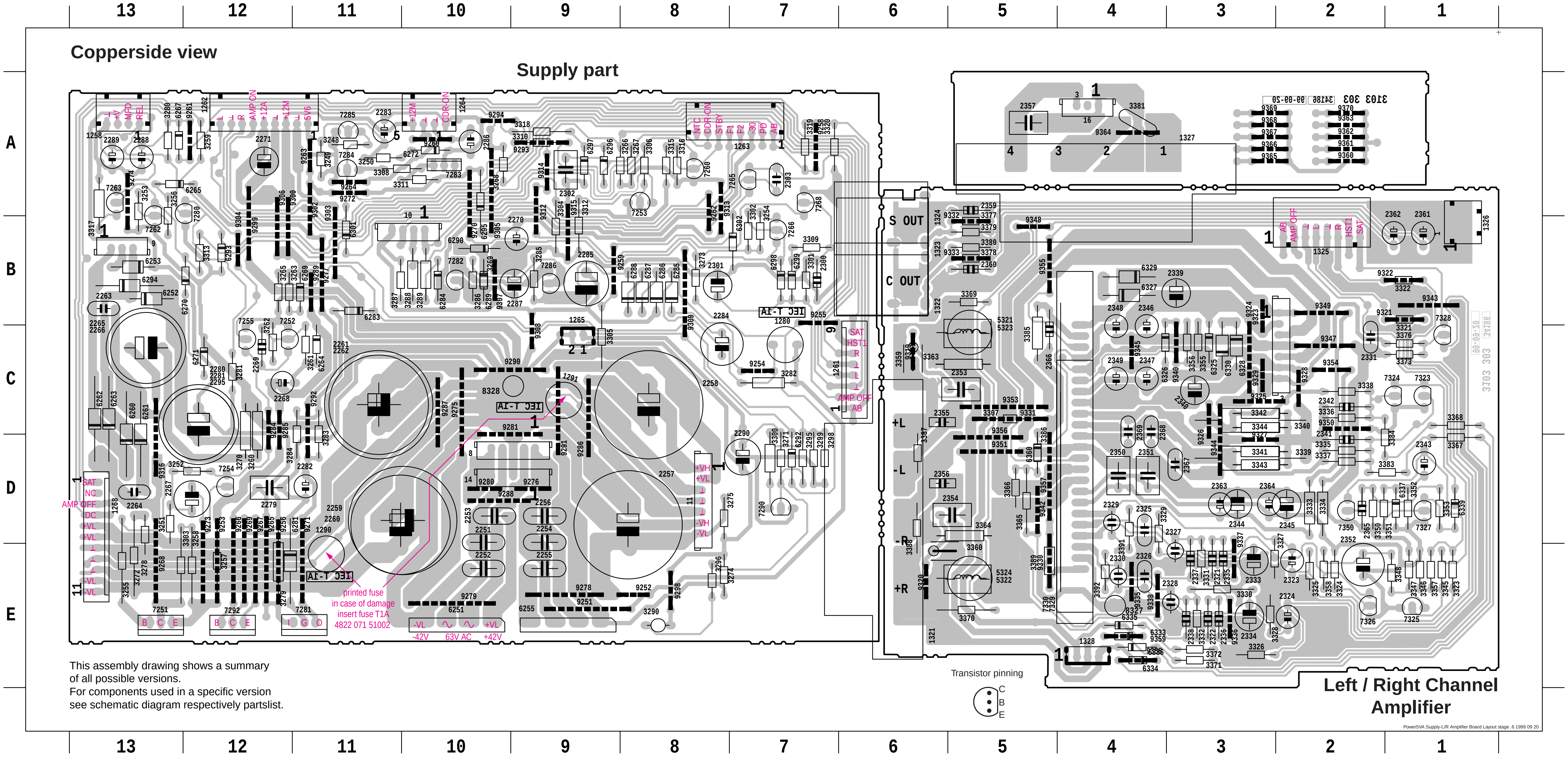
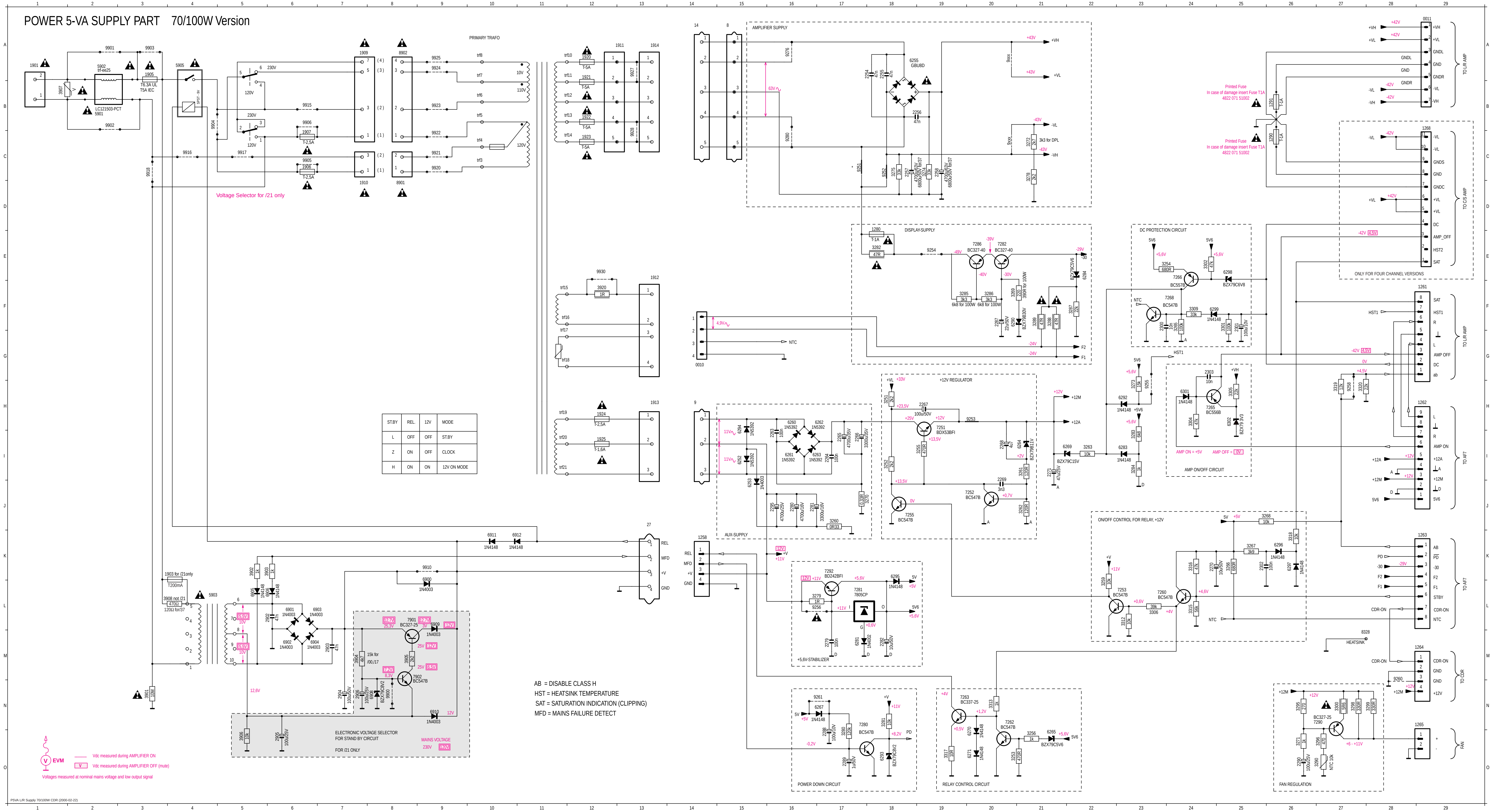
9365	A	3
9366	A	3
9367	A	3
9368	A	3
9369	A	3
9370	A	2



This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

POWER 5-VA SUPPLY PART 70/100W Version


PRIMARY TRAFO
Voltage Selector for /21 only
AMPLIFIER SUPPLY
DISPLAY-SUPPLY
DC PROTECTION CIRCUIT
+12V REGULATOR
AUX-SUPPLY
+5,6V-STABILIZER
ON/OFF CONTROL FOR RELAY, +12V
AMP ON/OFF CIRCUIT
AMP ON = +5V
AMP OFF = 0V
POWER DOWN CIRCUIT
RELAY CONTROL CIRCUIT
FAN REGULATION
ONLY FOR FOUR CHANNEL VERSIONS
Printed Fuse
In case of damage insert Fuse T1A
4822 071 51002
TO L/R AMP
TO C/S AMP
TO AF7
TO CDR
FAN
HEATSINK
1903 for /21only
T200mA
3908 not /21
120Ω for/37
15k for /00,/17
3k3 for DPL
6k8 for 100W
ELECTRONIC VOLTAGE SELECTOR
FOR STAND BY CIRCUIT
FOR /21 ONLY
MAINS VOLTAGE
230V 120V
REL
MFD
+V
GND
NTC
HST1
HST2
SAT
AMP_OFF
GNDL
GNDR
GNDS
GNDC
CDR-ON
STBY
+VH
+VL
-VL
-VH
+12M
+12A
5V6

ST.BY	REL.	12V	MODE
L	OFF	OFF	ST.BY
Z	ON	OFF	CLOCK
H	ON	ON	12V ON MODE

AB = DISABLE CLASS H
HST = HEATSINK TEMPERATURE
SAT = SATURATION INDICATION (CLIPPING)
MFD = MAINS FAILURE DETECT

EVM
Vdc measured during AMPLIFIER ON
Vdc measured during AMPLIFIER OFF (mute)
Voltages measured at nominal mains voltage and low output signal

0010	G14
0011	B29
1258	K14
1261	F29
1262	H29
1263	M29
1264	M29
1265	N29
1268	B29
1280	E18
1290	C26
1291	B26
14	A14
1901	A 1
1903	J15
1905	A 3
1906	C 6
1907	C 6
1909	A 7
1910	D 7
1911	A13
1912	E13
1913	H13
1914	A13
1920	A12
1921	A12
1922	B12
1923	C12
1924	H12
1925	I12
2251	A16
2252	A16
2253	B17
2254	A18
2255	A18
2256	B19
2257	C18
2258	C19
2260	C20
2262	C20
2263	I16
2264	I17
2265	I17
2266	I17
2267	H19
2268	I20
2269	J20
2270	K24
2271	I21
2279	M17
2280	J16
2281	J16
2282	M18
2283	N24
2286	N25
2287	F20
2288	O17
2289	O17
2290	O26
2295	J16
2300	F23
2301	F25
2302	K25
2303	G24
27	J13
2902	L 6
2903	M 7
2904	N 7
2905	N 6
2906	N 7
3248	O23
3249	O24
3250	O24
3251	H18
3252	I18
3253	O20
3254	E24
3255	I19
3256	O21
3259	L22
3260	J17
3261	I21
3262	J21
3263	I22
3265	F24
3266	K25
3267	K25
3268	J26
3269	F21
3270	J18
3271	O26
3272	C21
3273	H23
3274	C19
3275	C18
3278	C21
3279	L17
3280	O17
3281	N18
3282	E18
3283	I23
3284	I23
3285	F19
3286	F20
3287	F22
3288	F21
3289	F21
3290	O26
3295	N26
3296	O27
3298	N27
3299	N28
3300	N27
3301	F25
3302	E24
3304	H24
3305	H25
3306	L23
3308	N23
3309	F24
3310	N23
3311	N23
3312	L23
3313	N20
3315	L24
3316	K24
3317	O19
3318	K26
3319	H27
3320	H27
3901	N 3
3902	K 5
3903	K 6
3904	M 7
3905	M 8
3906	N 5
3907	B 1
3908	L 4
3920	F12
5901	B 2
5902	A 2
5903	L 4
5905	A 4
6251	A17
6252	I15
6253	J15
6255	A18
6260	H16
6261	I16
6262	H17
6263	I17
6264	I20
6265	N21
6267	N17
6269	I22
6270	O19
6271	O19
6272	N24
6281	M17
6283	I23
6284	E22
6289	F21
6290	F20
6292	H23
6293	O18
6294	H15
6295	K18
6296	K26
6297	K26
6298	E25
6299	F24
6301	H24
6302	H25
6900	K 9
6901	L 6
6902	M 6
6903	L 7
6904	M 6
6905	L 5
6906	L 5
6908	N 8
6909	L 9
6910	N 9
6911	K10
6912	K11
7251	H19
7252	J20
7253	L23
7255	J18
7260	L24
7262	N20
7263	N20
7265	H24
7266	E24
7268	F24
7280	N17
7281	L17
7282	E20
7283	M23
7284	O23
7285	O24
7286	E20
7290	N26
7292	K17
7901	L 8
7902	M 8
8	A15
8901	D 8
8902	A 8
9	H14
9251	C17
9252	C18
9253	H20
9254	E19
9255	H23
9256	L17
9258	H27
9260	N28
9261	N17
9276	A16
9280	C16
9900	N 8
9901	A 2
9902	B 2
9903	A 3
9904	B 4
9905	C 6
9906	B 6
9910	K 9
9911	F 1
9912	G 1
9913	G 1
9914	G 1
9915	B 6
9916	C 4
9917	C 5
9918	C 3
9920	C 9
9921	C 9
9922	C 9
9923	B 9
9924	A 9
9925	A 9
9927	A13
9928	C13
9930	E12
trf10	A11
trf11	A11
trf12	B11
trf13	B11
trf14	C11
trf15	F12
trf16	F11
trf17	G12
trf18	G11
trf19	H11
trf20	I11
trf21	I11
trf3	C10
trf4	C10
trf5	B10
trf6	B10
trf7	A10
trf8	A10

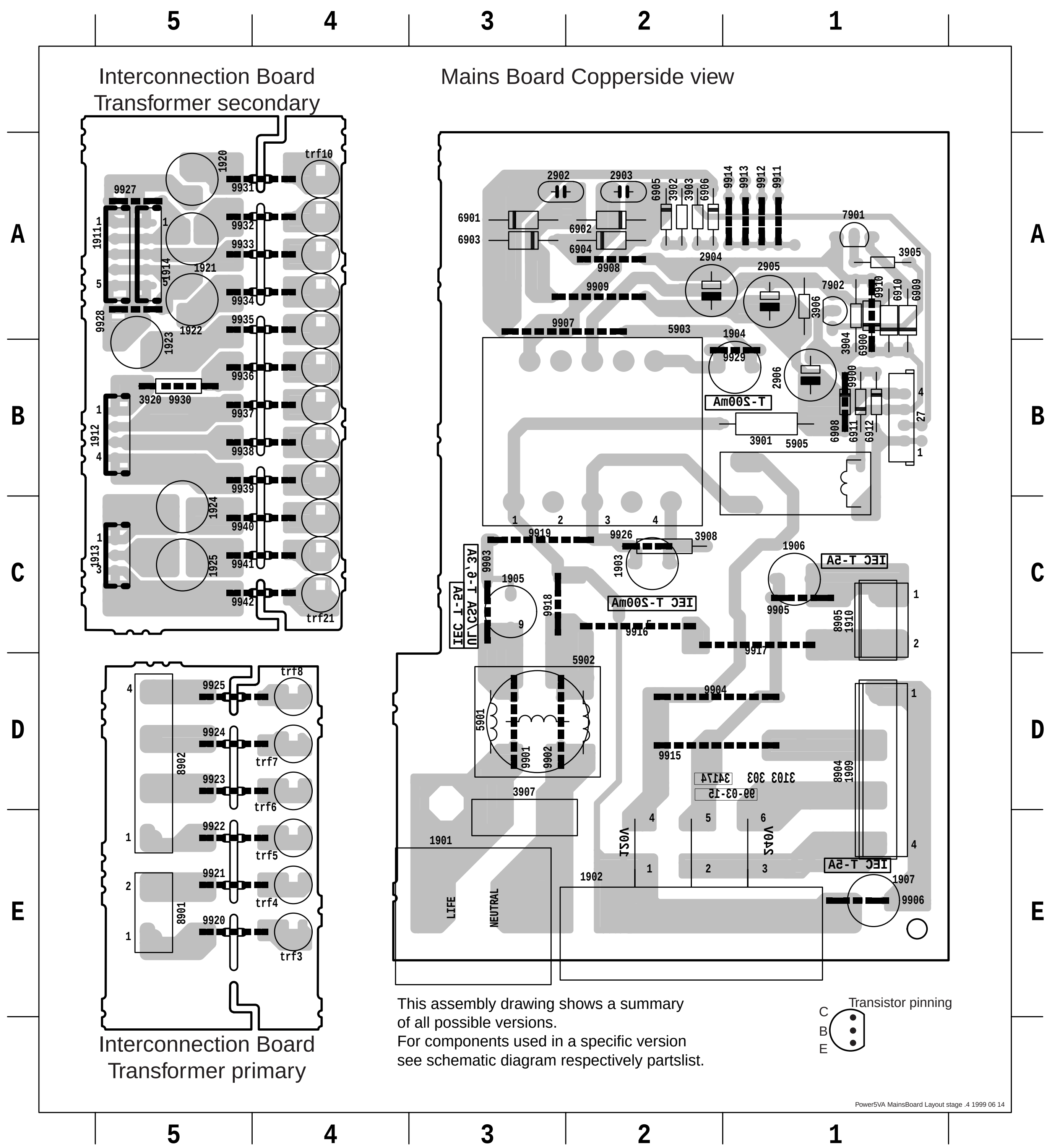
COMPONENT LAYOUT MAINS BOARD

Interconnection Board

primary side	secondary side		
8901 E 5	1911 A 5	9930 B 4	trf10 A 3
8902 D 5	1912 B 5	9931 A 4	trf11 A 3
9920 E 4	1913 C 5	9932 A 4	trf12 A 3
9921 E 4	1914 A 5	9933 A 4	trf13 A 3
9922 E 4	1920 A 4	9934 A 4	trf14 B 3
9923 D 4	1921 A 4	9935 B 4	trf15 B 3
9924 D 4	1922 A 4	9936 B 4	trf16 B 3
9925 D 4	1923 B 5	9937 B 4	trf17 B 3
trf3 E 4	1924 C 4	9938 B 4	trf18 C 3
trf4 E 4	1925 C 4	9939 C 4	trf19 C 3
trf5 E 4	3920 B 4	9940 C 4	trf20 C 3
trf6 D 4	9927 A 5	9941 C 4	trf21 C 3
trf7 D 4	9928 A 5	9942 C 4	
trf8 D 4			

Mains Board

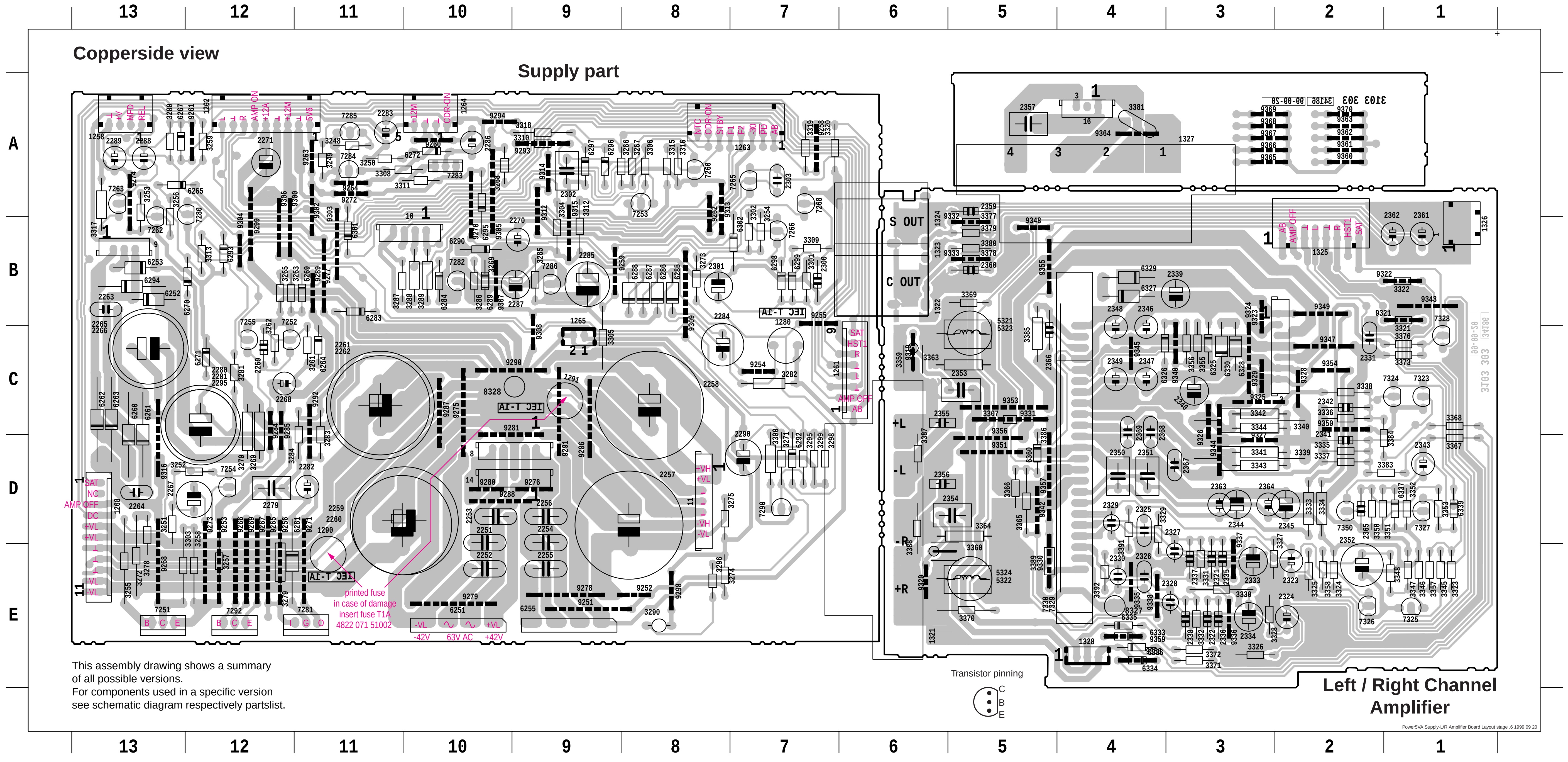
27 B 1	2905 A 1	5905 C 1	7901 A 1	9909 A 2
1901 E 3	2906 B 1	6900 B 1	7902 B 1	9910 B 1
1902 E 2	3901 B 1	6901 A 3	8904 D 1	9911 A 1
1903 C 2	3902 A 2	6902 A 2	8905 C 1	9912 A 1
1904 B 2	3903 A 2	6903 A 3	9900 B 1	9913 A 2
1905 C 3	3904 B 1	6904 A 2	9901 D 3	9914 A 2
1906 C 1	3905 A 1	6905 A 2	9902 D 3	9915 D 2
1907 E 1	3906 A 1	6906 A 2	9903 C 3	9916 D 2
1909 D 1	3907 E 3	6908 B 1	9904 D 2	9917 D 1
1910 C 1	3908 C 2	6909 B 1	9905 C 1	9918 C 3
2902 A 3	5901 D 3	6910 B 1	9906 E 1	9919 C 3
2903 A 2	5902 D 3	6911 B 1	9907 B 3	9926 C 2
2904 A 2	5903 B 2	6912 B 1	9908 A 2	9929 B 2


5
4
3
2
1
A
B
C
D
E
Interconnection Board
Transformer secondary
Mains Board Copperside view
Interconnection Board
Transformer primary
LIFE
NEUTRAL
IEC T-5A
IEC T-200mA
Transistor pinning
C
B
E
Power5VA MainsBoard Layout stage .4 1999 06 14

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

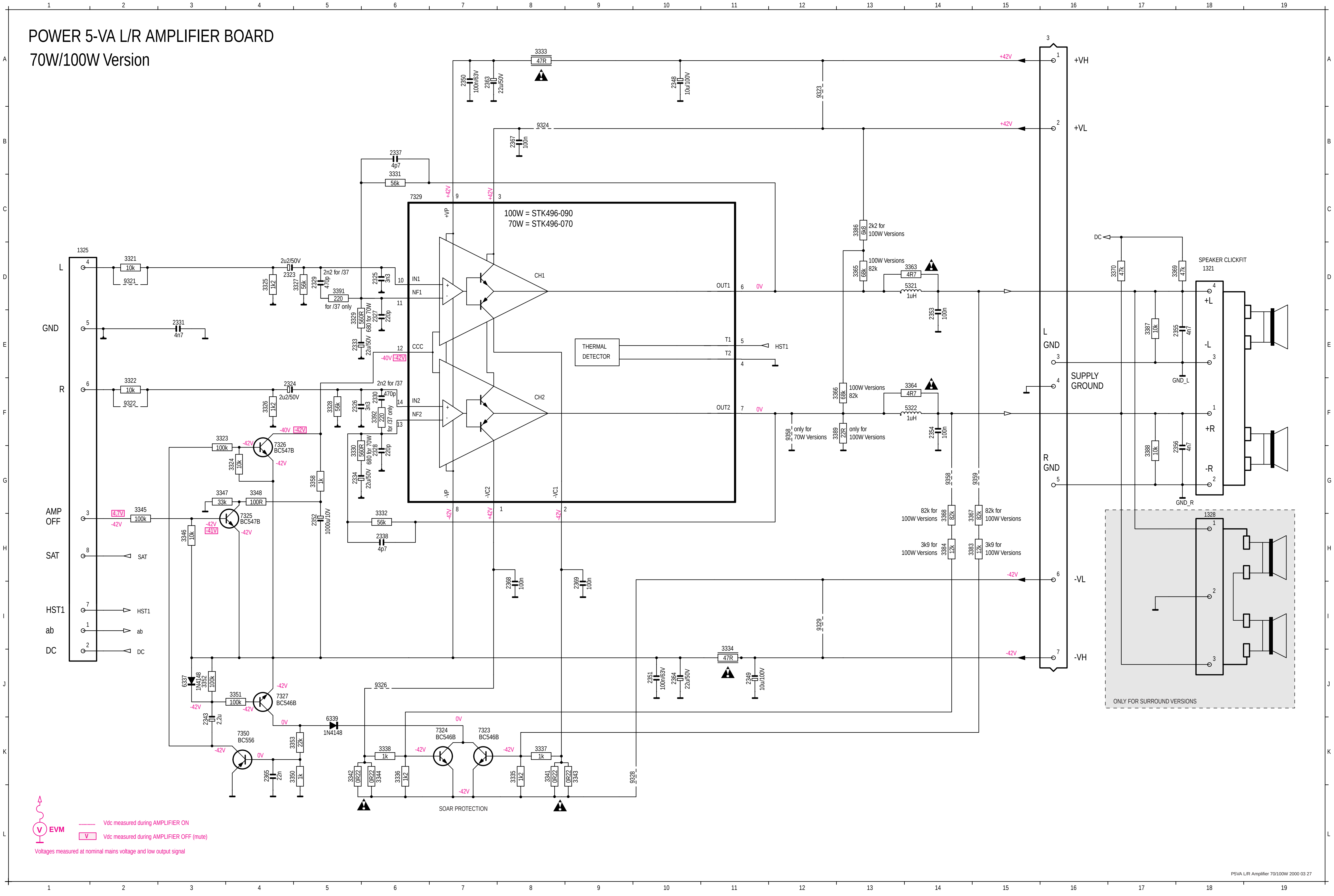
COMPONENT LAYOUT SUPPLY PART & L/R AMPLIFIER PART

3 C 2	1321 D 6	2260 D 11	2284 C 8	2326 E 4	2344 D 3	2362 B 1	3257 E 12	3275 D 8	3299 D 7	3317 A 13	3334 D 2	3352 D 1	3372 E 3	5321 C 5	6271 C 12	6298 B 7	7251 E 13	7286 B 9	9254 C 7	9272 A 11	9291 C 9	9314 A 9	9333 B 5	9355 B 5
8 D 9	1322 B 6	2261 C 11	2285 B 9	2327 E 3	2345 D 2	2363 D 3	3258 E 12	3278 D 13	3300 D 7	3318 A 9	3335 D 2	3353 D 1	3373 C 1	5322 E 5	6272 A 10	6299 B 7	7252 C 12	7290 D 7	9255 B 7	9273 E 12	9292 C 11	9315 B 9	9335 E 4	9356 D 5
9 B 13	1323 B 6	2262 C 11	2286 A 10	2328 E 3	2346 C 4	2364 D 3	3259 A 12	3279 E 12	3301 B 7	3319 A 7	3336 C 2	3355 C 3	3376 C 1	5323 C 5	6281 E 12	6301 B 11	7253 A 8	7292 E 12	9256 E 12	9274 A 13	9293 A 9	9316 D 13	9336 E 3	9357 D 5
10 B 10	1324 B 6	2263 B 13	2287 B 9	2329 D 4	2347 C 4	2365 D 2	3260 C 12	3280 A 13	3302 B 7	3320 A 7	3337 D 2	3356 C 3	3377 B 5	5324 E 5	6283 B 11	6302 B 7	7254 D 12	7323 C 1	9258 A 7	9275 C 10	9294 A 10	9319 C 6	9337 E 3	9358 E 4
11 D 8	1325 B 2	2264 D 13	2288 A 13	2330 E 4	2348 C 4	2366 C 5	3261 C 11	3281 C 12	3303 E 13	3321 B 1	3338 C 2	3357 E 1	3378 B 5	6251 E 10	6284 B 10	6325 C 3	7255 C 12	7324 C 1	9259 B 9	9276 D 9	9298 E 8	9320 E 6	9338 E 4	9359 E 4
14 D 9	1326 B 1	2265 C 13	2289 A 13	2331 C 2	2349 C 4	2367 D 3	3262 C 12	3282 C 7	3304 B 9	3322 B 1	3339 D 2	3358 E 2	3379 B 5	6252 B 13	6285 B 8	6326 C 4	7260 A 8	7325 E 1	9260 A 10	9277 B 11	9299 B 12	9321 B 1	9340 C 3	9360 A 2
16 A 4	1327 A 4	2266 C 13	2290 D 7	2333 E 3	2350 D 4	2368 C 4	3263 B 12	3283 D 11	3305 C 9	3323 E 1	3340 C 2	3359 C 6	3380 B 5	6253 B 13	6286 B 8	6327 B 4	7262 B 13	7326 E 2	9261 A 12	9278 E 9	9300 B 12	9322 B 1	9342 D 5	9361 A 2
1258 A 13	1328 E 4	2267 D 12	2295 C 12	2334 E 3	2351 D 4	2369 C 4	3265 B 12	3284 D 11	3306 A 8	3324 E 2	3341 D 3	3360 E 6	3381 A 4	6255 E 9	6287 B 8	6328 C 3	7263 A 13	7327 D 1	9262 A 8	9279 E 10	9302 A 11	9323 B 3	9343 B 1	9362 A 2
1261 C 6	2251 D 10	2268 C 12	2300 B 7	2335 E 3	2352 E 2	3248 A 11	3266 A 8	3285 B 9	3307 C 5	3325 E 2	3342 C 3	3363 C 5	3383 D 1	6260 D 13	6288 B 8	6329 B 4	7265 A 7	7328 C 1	9263 A 11	9280 D 10	9303 B 11	9324 C 3	9344 D 3	9363 A 2
1262 A 12	2252 E 10	2269 C 12	2301 B 8	2336 E 3	2353 C 5	3249 A 11	3267 A 8	3286 B 10	3308 A 10	3326 E 3	3343 D 3	3364 D 5	3384 D 1	6261 D 13	6289 B 10	6330 C 3	7266 B 7	7329 D 4	9264 A 11	9281 D 10	9304 B 12	9325 C 3	9345 C 4	9364 A 4
1263 A 7	2253 D 10	2270 B 9	2302 A 9	2337 E 3	2354 D 5	3250 A 11	3268 A 10	3287 B 11	3309 B 7	3327 E 3	3344 C 3	3365 D 5	3385 C 5	6262 C 13	6290 B 10	6333 E 4	7268 A 7	7330 C 4	9265 E 12	9284 C 12	9305 A 10	9326 C 3	9347 C 2	9365 A 3
1264 A 10	2254 D 9	2271 A 12	2303 A 7	2338 E 3	2355 C 6	3251 D 13	3269 B 10	3288 B 10	3310 A 9	3328 E 3	3345 E 1	3366 D 5	3386 D 5	6263 C 13	6292 D 7	6334 E 4	7280 A 12	7350 D 2	9266 E 12	9285 C 12	9306 B 12	9327 D 3	9348 B 5	9366 A 3
1265 C 9	2255 E 9	2279 D 12	2321 E 3	2339 B 3	2356 D 6	3252 D 12	3270 C 12	3289 B 10	3311 A 10	3329 D 4	3346 E 1	3367 D 1	3387 D 6	6264 C 11	6293 B 12	6335 E 4	7281 E 11	8327 E 4	9267 E 12	9286 C 9	9307 B 10	9328 C 2	9349 B 2	9367 A 3
1268 D 13	2256 D 9	2280 C 12	2322 E 3	2340 C 3	2357 A 5	3253 A 13	3271 D 7	3290 E 8	3312 B 9	3330 E 3	3347 E 1	3368 C 1	3388 D 6	6265 A 13	6294 B 13	6336 E 4	7282 B 10	8328 C 9	9268 E 13	9287 C 10	9308 C 9	9329 C 3	9350 C 2	9368 A 3
1280 C 7	2257 D 8	2281 C 12	2323 E 2	2341 D 2	2359 A 5	3254 B 7	3272 E 13	3295 D 7	3313 B 12	3331 E 3	3348 E 1	3369 B 5	3389 E 5	6267 A 13	6295 A 10	6337 D 1	7283 A 10	9251 E 9	9269 E 12	9288 D 10	9309 B 8	9330 E 5	9351 D 5	9369 A 3
1290 E 11	2258 C 8	2282 D 11	2324 E 2	2342 C 2	2360 B 5	3255 E 13	3273 B 8	3296 E 8	3315 A 8	3332 E 3	3350 D 2	3370 E 5	3391 D 4	6269 B 11	6296 A 9	6339 D 1	7284 A 11	9252 E 8	9270 A 10	9289 B 11	9312 A 9	9331 C 5	9353 C 5	9370 A 2
1291 C 9	2259 D 10	2283 A 11	2325 D 4	2343 D 1	2361 B 1	3256 B 13	3274 E 8	3298 D 7	3316 A 8	3333 D 2	3351 D 2	3371 E 3	3392 E 4	6270 B 12	6297 A 9	6360 D 5	7285 A 11	9253 E 12	9271 E 11	9290 C 10	9313 A 8	9332 B 5	9354 C 2	


13
12
11
10
9
8
7
6
5
4
3
2
1
A
B
C
D
E
Copperside view
Supply part
S OUT
C OUT
+L
-L
-R
+R
IEC T-1A
printed fuse
in case of damage
insert fuse T1A
4822 071 51002
-VL
+VL
-42V
63V AC
+42V
I
G
O
B
C
E
SAT
HST1
AMP OFF
AB
Left / Right Channel Amplifier
Transistor pinning
C
B
E
Power5VA Supply-L/R Amplifier Board Layout stage .6 1999 09 20

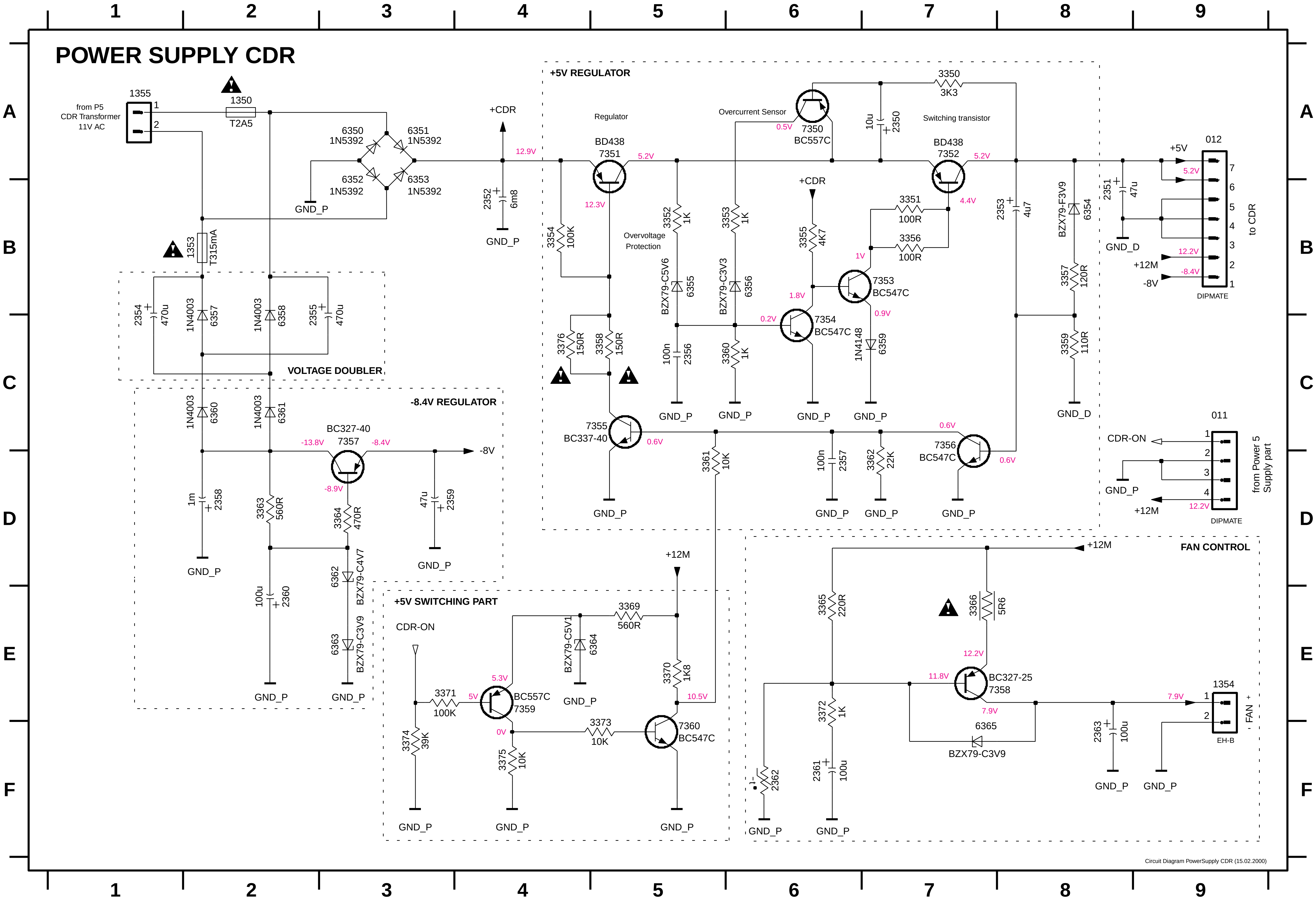
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

POWER 5-VA L/R AMPLIFIER BOARD
70W/100W Version

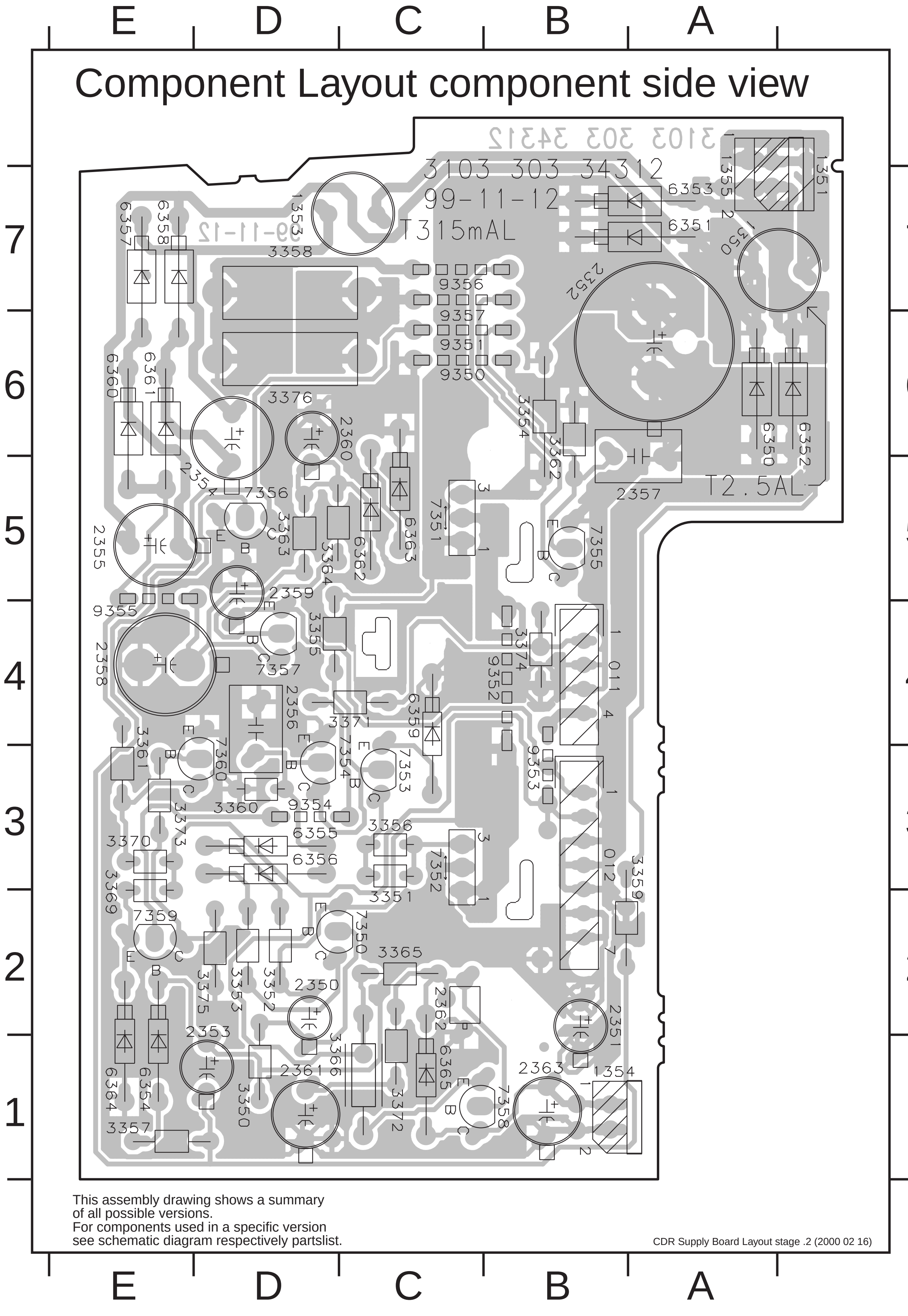

1325
L
GND
R
AMP OFF
SAT
HST1
ab
DC
3321 10k
9321
3322 10k
9322
2331 4n7
2323 2u2/50V
2324 2u2/50V
3325 1k2
3326 1k2
3327 56k
3328 56k
2329 470p
2n2 for /37
3391 220
for /37 only
3392 220
for /37 only
2325 3n3
2326 3n3
2327 220p
2328 220p
3329 560R 680 for 70W
3330 560R 680 for 70W
2333 22u/50V
2334 22u/50V
2337 4p7
3331 56k
2338 4p7
3332 56k
7329
100W = STK496-090
70W = STK496-070
+VP
-VP
-VC2
-VC1
IN1
NF1
IN2
NF2
CCC
CH1
CH2
OUT1
OUT2
THERMAL DETECTOR
T1
T2
3333 47R
3334 47R
2350 100n/63V
2363 22u/50V
2348 10u/100V
2351 100n/63V
2364 22u/50V
2349 10u/100V
2367 100n
2368 100n
2369 100n
9323
9324
9329
+42V
-42V
-40V
0V
3323 100k
3324 10k
7326 BC547B
3347 33k
3348 100R
3345 100k
7325 BC547B
3346 10k
4.7V
-41V
3358 1k
2352 1000u/10V
6337 1N4148
3352 100k
3351 100k
7327 BC546B
2343 2.2u
7350 BC556
3353 22k
2365 22n
3350 1k
6339 1N4148
9326
3338 1k
7324 BC546B
7323 BC546B
3337 1k
3342 0R22
3344 0R22
3336 1k2
3335 1k2
3341 0R22
3343 0R22
9328
SOAR PROTECTION
3386 6k8
2k2 for 100W Versions
3385 68k
100W Versions 82k
3363 4R7
5321 1uH
2353 100n
3366 68k
100W Versions 82k
3364 4R7
5322 1uH
2354 100n
9358 only for 70W Versions
3389 22R only for 100W Versions
9358
9359
3368 82k
82k for 100W Versions
3367 82k
82k for 100W Versions
3384 12k
3k9 for 100W Versions
3383 12k
3k9 for 100W Versions
3
+VH
+VL
L GND
SUPPLY GROUND
R GND
-VL
-VH
DC
3370 47k
3369 47k
3387 10k
2355 4n7
3388 10k
2356 4n7
SPEAKER CLICKFIT
1321
+L
-L
+R
-R
GND_L
GND_R
1328
ONLY FOR SURROUND VERSIONS
EVM
Vdc measured during AMPLIFIER ON
Vdc measured during AMPLIFIER OFF (mute)
Voltages measured at nominal mains voltage and low output signal
P5VA L/R Amplifier 70/100W 2000 03 27

1321	D18
1325	D 1
1328	G18
2321	B 6
2322	H 6
2323	D 4
2324	F 4
2325	D 5
2326	F 5
2327	E 6
2328	G 6
2329	D 6
2330	F 6
2331	E 3
2333	E 5
2334	G 5
2335	B 6
2336	H 6
2337	B 6
2338	H 6
2341	K 7
2342	K 6
2343	K 3
2344	A 8
2345	J10
2346	B10
2347	I11
2348	A10
2349	J11
2350	A 7
2351	J10
2352	H 5
2353	E14
2354	F14
2355	E18
2356	G18
2363	A 7
2364	J10
2365	K 4
2366	C12
2367	B8
2368	I8
2369	I9
3	A16
3321	D 2
3322	F 2
3323	F 3
3324	G 4
3325	D 4
3326	F 4
3327	D 5
3328	F 5
3329	E 5
3330	G 5
3331	C 6
3332	H 6
3333	A 8
3334	J11
3335	K 8
3336	K 6
3337	K 8
3338	K 6
3341	K 8
3342	K 5
3343	K 9
3344	K 5
3345	G 2
3346	H 3
3347	G 3
3348	G 4
3350	K 5
3351	J 4
3352	J 3
3353	K 5
3355	C12
3356	I12
3358	G 5
3363	D14
3364	E14
3365	D13
3366	F13
3367	H15
3368	H14
3369	D18
3370	D17
3383	H15
3384	H14
3385	D12
3386	C13
3387	E17
3388	G17
3389	F13
5321	D14
5322	F14
5323	D14
5324	F14
6325	B12
6326	I12
6327	A13
6328	I13
6329	A13
6330	I13
6333	G14
6334	G14
6337	J 3
6339	K 5
6360	C12
7323	K 7
7324	K 7
7325	H 4
7326	G 4
7327	J 4
7329	C 6
7350	K 4
9321	D 2
9322	F 2
9323	A12
9324	J 6
9325	J 6
9326	J 6
9327	K 9
9328	K10
9329	I12
9330	F12
9331	D12
9358	G14
9359	G15

POWER SUPPLY CDR


1 2 3 4 5 6 7 8 9
A B C D E F
from P5
CDR Transformer
11V AC
1355
1350
T2A5
6350 1N5392
6351 1N5392
6352 1N5392
6353 1N5392
GND_P
+CDR
12.9V
2352 6m8
1353 T315mA
VOLTAGE DOUBLER
2354 470u
6357 1N4003
6358 1N4003
2355 470u
-8.4V REGULATOR
6360 1N4003
6361 1N4003
BC327-40
7357
-13.8V
-8.4V
-8.9V
-8V
2358 1m
3363 560R
3364 470R
2359 47u
2360 100u
6362 BZX79-C4V7
6363 BZX79-C3V9
+5V REGULATOR
Regulator
BD438
7351
5.2V
12.3V
3354 100K
Overvoltage
Protection
3352 1K
3353 1K
6355 BZX79-C5V6
6356 BZX79-C3V3
2356 100n
3360 1K
3376 150R
3358 150R
7355
BC337-40
0.6V
3361 10K
Overcurrent Sensor
0.5V
7350
BC557C
2350 10u
3350 3K3
Switching transistor
BD438
7352
5.2V
4.4V
3351 100R
3356 100R
3355 4K7
1V
1.8V
0.2V
7353 BC547C
7354 BC547C
0.9V
6359 1N4148
2357 100n
3362 22K
7356 BC547C
0.6V
2353 4u7
6354 BZX79-F3V9
3357 120R
3359 110R
GND_D
2351 47u
+5V
012
5.2V
12.2V
-8.4V
+12M
-8V
to CDR
DIPMATE
011
CDR-ON
from Power 5
Supply part
12.2V
+5V SWITCHING PART
CDR-ON
+12M
3371 100K
5V
5.3V
BC557C
7359
0V
3374 39K
3375 10K
6364 BZX79-C5V1
3369 560R
3370 1K8
10.5V
3373 10K
7360 BC547C
FAN CONTROL
3365 220R
3366 5R6
12.2V
11.8V
BC327-25
7358
7.9V
6365
BZX79-C3V9
3372 1K
2361 100u
2362
2363 100u
1354
FAN
EH-B
7.9V
Circuit Diagram PowerSupply CDR (15.02.2000)

011	C9
012	A9
1350	A2
1351	A1
1353	B2
1354	E9
1355	A1
2350	A7
2351	B8
2352	B4
2353	B8
2354	C1
2355	C2
2356	C5
2357	D6
2358	D2
2359	D3
2360	E2
2361	F6
2362	F6
2363	F8
3350	A7
3351	B7
3352	B5
3353	B6
3354	B4
3355	B6
3356	B7
3357	B8
3358	C5
3359	C8
3360	C6
3361	D5
3362	D7
3363	D2
3364	D3
3365	E6
3366	E7
3369	E5
3370	E5
3371	E3
3372	E6
3373	F5
3374	F3
3375	F4
3376	C4
6350	A3
6351	A3
6352	B3
6353	B3
6354	B8
6355	B5
6356	B6
6357	C2
6358	C2
6359	C7
6360	C2
6361	C2
6362	D3
6363	E3
6364	E4
6365	F7
7350	A6
7351	A5
7352	A7
7353	B7
7354	C6
7355	C5
7356	C7
7357	C3
7358	E7
7359	E4
7360	F5



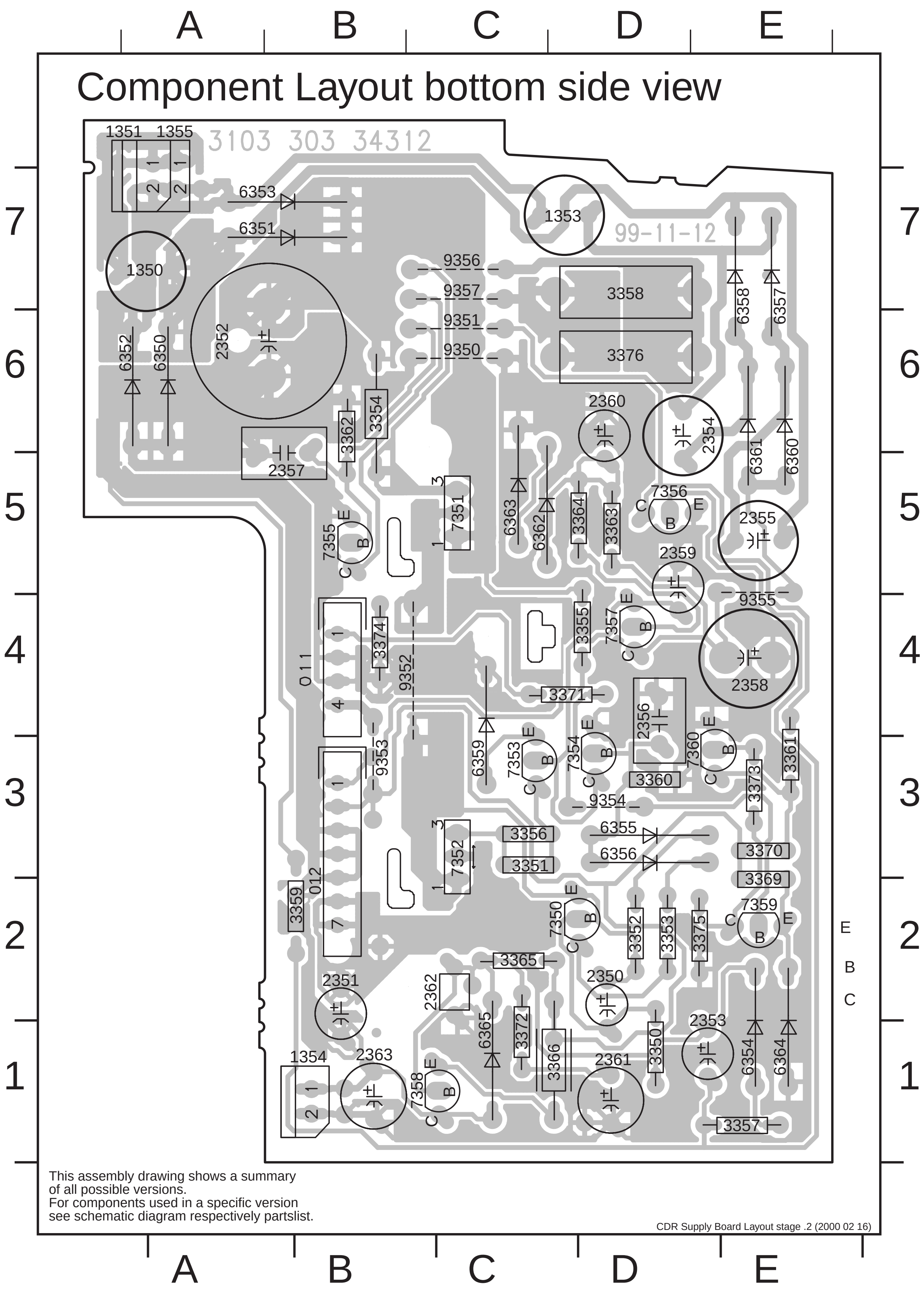
Component Layout component side view

E D C B A
7 6 5 4 3 2 1
3103 303 34312
99-11-12
T315mAL
T2.5AL
1350
1351
1353
1354
1355
011
012

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

CDR Supply Board Layout stage .2 (2000 02 16)

011	B4
012	B3
1350	A7
1351	A7
1353	D7
1354	B1
1355	A7
2350	D2
2351	B2
2352	B7
2353	E2
2354	E5
2355	E5
2356	D4
2357	B5
2358	E4
2359	D5
2360	D6
2361	D1
2362	C2
2363	B1
3350	D1
3351	C2
3352	D2
3353	D2
3354	B6
3355	D4
3356	C3
3357	E1
3358	D7
3359	B3
3360	D3
3361	E3
3362	B5
3363	D5
3364	D5
3365	C2
3366	D1
3369	E2
3370	E3
3371	D4
3372	C1
3373	E3
3374	B4
3375	E2
3376	D6
6350	A6
6351	A7
6352	A6
6353	A7
6354	E1
6355	D3
6356	D3
6357	E7
6358	E7
6359	C4
6360	E6
6361	E6
6362	D5
6363	C5
6364	E1
6365	C1
7350	D2
7351	C5
7352	C3
7353	C3
7354	D3
7355	B5
7356	D5
7357	D4
7358	C1
7359	E2
7360	E3
9350	C6
9351	C6
9352	C4
9353	B3
9354	D3
9355	E4
9356	C7
9357	C6



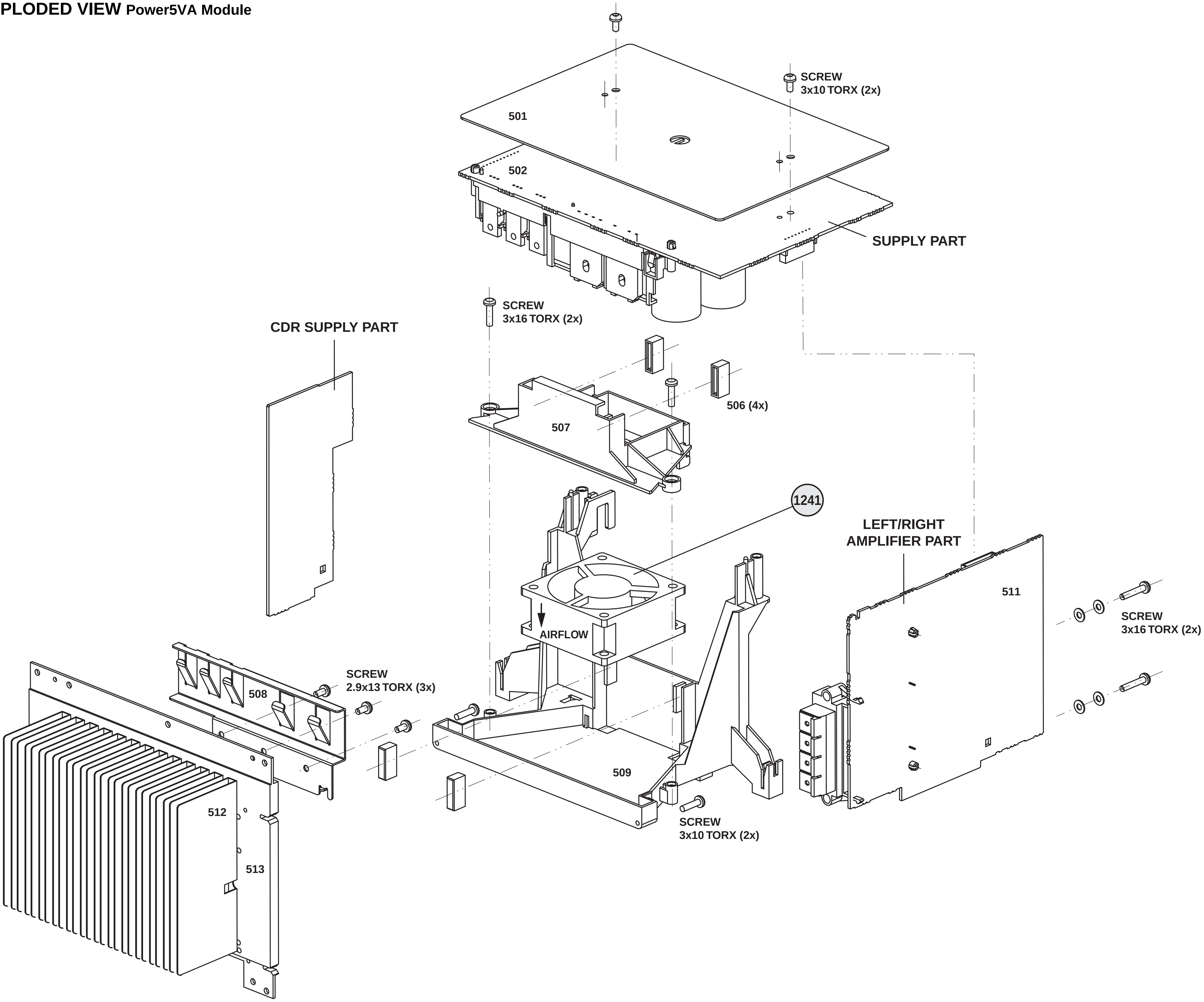
Component Layout bottom side view

A B C D E
7 6 5 4 3 2 1
3103 303 34312
99-11-12
1350
1351
1353
1354
1355
011
012
E
B
C

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

CDR Supply Board Layout stage .2 (2000 02 16)

EXPLODED VIEW Power5VA Module


SCREW
3x10 TORX (2x)
501
502
SUPPLY PART
SCREW
3x16 TORX (2x)
CDR SUPPLY PART
506 (4x)
507
1241
LEFT/RIGHT
AMPLIFIER PART
511
SCREW
3x16 TORX (2x)
AIRFLOW
SCREW
2.9x13 TORX (3x)
508
509
SCREW
3x10 TORX (2x)
512
513

ELECTRICAL PARTSLIST POWER BOARD

MECHANICAL PARTS

0002	4822 256 10556	HOLDER STK407/P5-VA
0222	3103 304 07050	INSULATING WASHER (TO126)
1241	4822 361 11161	KD1206PTS3, FAN

MISCELLANEOUS

1321	4822 267 31176	SPEAKER TERMINAL
1901	4822 265 31015⚠	MAINS SOCKET, IEC
1901	4822 265 31016⚠	MAINS SOCKET, UL
1902	4822 272 10269⚠	VOLTAGE SELECTOR
1903	4822 071 52001⚠	FUSE 200mA/T
1905	4822 071 55002⚠	FUSE T5A
1905	4822 252 51123⚠	FUSE T6,3A
1906	4822 071 52502⚠	FUSE T 2,5A
1907	4822 071 52502⚠	FUSE T 2,5A
1920	4822 071 55002⚠	FUSE T5A
1923	4822 071 55002⚠	FUSE T5A
1924	4822 071 52502⚠	FUSE T 2,5A
1925	4822 071 51602⚠	FUSE 1,6A
5903	4822 146 11142⚠	STAND BY TRAFO, for /37 only
5903	4822 146 11143⚠	STAND BY TRAFO, for /22 only
5903	4822 146 11144⚠	STAND BY TRAFO, for /21 only
5905	4822 280 10382⚠	STAND BY RELAIS, SDT-SS-109DM

CAPACITORS

2254	4822 121 43526	47nF	5%	100V
2255	4822 121 43526	47nF	5%	100V
2256	4822 121 43526	47nF	5%	100V
2257	4822 124 11504	6800µF	20	63V
2257	4822 124 80415	4700µF	20%	50V
2258	4822 124 11504	6800µF	20	63V
2258	4822 124 80415	4700µF	20%	50V
2263	5322 121 42386	100nF	5%	63V
2264	5322 121 42386	100nF	5%	63V
2265	4822 124 80563	4700µF	20%	35V
2267	4822 124 40255	100µF	20%	50V
2268	4822 124 40769	4,7µF	20%	100V
2269	4822 121 51387	10nF	20%	16V
2269	4822 122 10577	3,3nF	10%	16V
2270	4822 124 40248	10µF	20%	63V
2271	4822 124 40433	47µF	20%	25V
2279	5322 121 42386	100nF	5%	63V
2280	4822 124 12328	6800µF	20%	16V
2282	4822 124 40248	10µF	20%	63V
2285	4822 124 40255	100µF	20%	50V
2289	4822 124 21913	1µF	20%	63V
2300	4822 121 51387	10nF	20%	16V
2301	4822 124 41584	100µF	20%	10V
2303	4822 121 41857	10nF	5%	250V
2323	4822 124 22652	2,2µF	20%	50V
2324	4822 124 22652	2,2µF	20%	50V
2325	4822 122 33532	3,3nF	5%	50V
2326	4822 122 33532	3,3nF	5%	50V
2327	5322 122 32334	220pF	10%	100V
2328	5322 122 32334	220pF	10%	100V
2329	5322 122 32311	470pF	10%	100V
2329	5322 122 32818	2,2nF	10%	100V
2330	5322 122 32311	470pF	10%	100V
2330	5322 122 32818	2,2nF	10%	100V
2331	5322 122 32261	4,7nF	10%	100V

CAPACITORS

2333	4822 124 81151	22µF	20%	50V
2334	4822 124 81151	22µF	20%	50V
2337	4822 122 10465	4,7pF	10%	50V
2338	4822 122 10465	4,7pF	10%	50V
2341	4822 126 11585	22nF	20%	50V
2342	4822 126 11585	22nF	20%	50V
2343	4822 124 22652	2,2µF	20%	50V
2344	4822 124 40764	22µF	20%	100V
2345	4822 124 40764	22µF	20%	100V
2348	4822 124 81043	10µF	20%	100V
2349	4822 124 81043	10µF	20%	100V
2350	5322 121 42386	100nF	5%	63V
2351	5322 121 42386	100nF	5%	63V
2352	4822 124 40181	220µF	20%	10V
2353	5322 121 42386	100nF	5%	63V
2354	5322 121 42386	100nF	5%	63V
2355	5322 122 32261	4,7nF	10%	100V
2356	5322 122 32261	4,7nF	10%	100V
2365	4822 126 12785	47nF	20%	50V
2367	5322 121 42386	100nF	5%	63V
2368	5322 121 42386	100nF	5%	63V
2369	5322 121 42386	100nF	5%	63V
2399	4822 126 12882	100nF	20%	50V
2902	4822 121 43526	47nF	5%	100V
2903	4822 121 43526	47nF	5%	100V
2904	4822 124 40255	100µF	20%	50V
2905	4822 124 40207	100µF	20%	25V

RESISTORS

3251	4822 116 52256	2,2kΩ	5%	0,16W
3252	4822 116 52256	2,2kΩ	5%	0,16W
3254	4822 116 52228	680Ω	5%	0,5W
3255	4822 116 83883	470Ω	5%	0,16W
3259	4822 050 21003	10kΩ	2%	0,25W
3260	4822 117 11342	0,33Ω	5%	2W
3261	4822 116 52206	120Ω	5%	0,5W
3262	4822 116 52206	120Ω	5%	0,5W
3263	4822 050 21003	10kΩ	2%	0,25W
3265	4822 116 52234	100kΩ	5%	0,5W
3266	4822 116 52228	680Ω	5%	0,5W
3267	4822 116 52276	3,9kΩ	5%	0,5W
3268	4822 050 21003	10kΩ	2%	0,25W
3269	4822 116 83881	390Ω	5%	0,5W
3270	4822 117 11342	0,33Ω	5%	2W
3272	4822 116 52263	2,7kΩ	5%	0,5W
3273	4822 116 52244	15kΩ	5%	0,5W
3274	4822 050 23303	33kΩ	1%	0,6W
3275	4822 050 23303	33kΩ	1%	0,6W
3278	4822 116 52256	2,2kΩ	5%	0,16W
3280	4822 116 52239	120kΩ	5%	0,5W
3281	4822 050 21003	10kΩ	2%	0,25W
3282	4822 052 10339⚠	33Ω	5%	NFR
3285	4822 116 83961	6,8kΩ	5%	0,16W
3286	4822 116 83961	6,8kΩ	5%	0,16W
3287	4822 116 52257	22kΩ	5%	0,5W
3288	4822 052 10399⚠	39Ω	5%	0,33W
3289	4822 052 10399⚠	39Ω	5%	0,33W
3302	4822 116 83884	47kΩ	5%	0,16W
3304	4822 116 83884	47kΩ	5%	0,16W

ELECTRICAL PARTSLIST POWER BOARD

RESISTORS

3305	4822 116 52257	22kΩ	5%	0,5W
3306	4822 116 83882	39kΩ	5%	0,5W
3309	4822 050 23303	33kΩ	1%	0,6W
3312	4822 050 21003	10kΩ	2%	0,25W
3313	4822 050 11002	1kΩ	5%	0,2W
3315	4822 116 52291	56kΩ	5%	0,5W
3316	4822 116 83884	47kΩ	5%	0,16W
3317	4822 116 52176	10Ω	5%	0,5W
3321	4822 050 21003	10kΩ	2%	0,25W
3322	4822 050 21003	10kΩ	2%	0,25W
3323	4822 116 52234	100kΩ	5%	0,5W
3324	4822 050 21003	10kΩ	2%	0,25W
3325	4822 116 52207	1,2kΩ	5%	0,5W
3326	4822 116 52207	1,2kΩ	5%	0,5W
3327	4822 116 52291	56kΩ	5%	0,5W
3328	4822 116 52291	56kΩ	5%	0,5W
3329	4822 116 52226	560Ω	5%	0,5W
3330	4822 116 52226	560Ω	5%	0,5W
3331	4822 116 52291	56kΩ	5%	0,5W
3332	4822 116 52291	56kΩ	5%	0,5W
3333	4822 052 10479⚠	47Ω	5%	0,3W
3334	4822 052 10479⚠	47Ω	5%	0,3W
3335	4822 116 52207	1,2kΩ	5%	0,5W
3336	4822 116 52207	1,2kΩ	5%	0,5W
3337	4822 050 11002	1kΩ	5%	0,2W
3338	4822 050 11002	1kΩ	5%	0,2W
3341	4822 117 11744⚠	0,22Ω	5%	1W
3342	4822 117 11744⚠	0,22Ω	5%	1W
3343	4822 117 11744⚠	0,22Ω	5%	1W
3344	4822 117 11744⚠	0,22Ω	5%	1W
3345	4822 116 52234	100kΩ	5%	0,5W
3346	4822 050 21003	10kΩ	2%	0,25W
3347	4822 050 23303	33kΩ	1%	0,6W
3348	4822 116 83872	220Ω	5%	0,5W
3350	4822 050 11002	1kΩ	5%	0,2W
3351	4822 116 52234	100kΩ	5%	0,5W
3352	4822 116 52234	100kΩ	5%	0,5W
3353	4822 116 52257	22kΩ	5%	0,5W
3358	4822 050 11002	1kΩ	5%	0,2W
3363	4822 053 10478⚠	4,7Ω	5%	1W
3364	4822 053 10478⚠	4,7Ω	5%	1W
3365	4822 116 52304	82kΩ	5%	0,5W
3366	4822 116 52304	82kΩ	5%	0,5W
3367	4822 116 52304	82kΩ	5%	0,5W
3368	4822 116 52304	82kΩ	5%	0,5W
3369	4822 116 83884	47kΩ	5%	0,16W
3370	4822 116 83884	47kΩ	5%	0,16W
3383	4822 116 83884	47kΩ	5%	0,16W
3384	4822 116 52276	3,9kΩ	5%	0,5W
3386	4822 116 52256	2,2kΩ	5%	0,16W
3387	4822 050 21003	10kΩ	2%	0,25W
3388	4822 050 21003	10kΩ	2%	0,25W
3389	4822 052 10229	22Ω	5%	0,33W
3391	4822 116 83872	220Ω	5%	0,5W
3392	4822 116 83872	220Ω	5%	0,5W
3901	4822 053 21106⚠	10MΩ	5%	0,5W
3902	4822 050 11002	1kΩ	5%	0,2W
3903	4822 050 11002	1kΩ	5%	0,2W
3904	4822 116 52244	15kΩ	5%	0,5W
3904	4822 116 52283	4,7kΩ	5%	0,5W

RESISTORS

3905	4822 116 52256	2,2kΩ	5%	0,16W
3906	4822 050 21003	10kΩ	2%	0,25W
3908	4822 053 10121⚠	120Ω	5%	1W
3908	4822 053 10471⚠	470Ω	5%	1W
3920	4822 052 10108⚠	1Ω	5%	0,33W

COILS

5321	4822 157 70599	1µH
5322	4822 157 70599	1µH
5901	4822 157 11832⚠	400µH
5902	4822 157 11628⚠	MAINS CHOKE

DIODES

6252	5322 130 80686	1N5392
6253	4822 130 31878	1N4003G
6255	4822 130 11139⚠	GBU8D
6260	5322 130 80686	1N5392
6261	5322 130 80686	1N5392
6262	5322 130 80686	1N5392
6263	5322 130 80686	1N5392
6264	9331 668 80133	DIO REG BZX79-B11
6269	4822 130 34281	BZX79-C15
6270	4822 130 30621	1N4148
6271	4822 130 30621	1N4148
6281	4822 130 31878	1N4003G
6284	4822 130 34173	BZX79-B5V6
6285	4822 130 31878	1N4003G
6290	4822 130 34328	BZX79-C30
6292	4822 130 30621	1N4148
6293	4822 130 34382	BZX79-B8V2
6294	5322 130 80686	1N5392
6295	4822 130 30621	1N4148
6298	4822 130 34278	BZX79-C6V8
6299	4822 130 30621	1N4148
6301	4822 130 30621	1N4148
6302	5322 130 31504	BZX79-B3V3
6337	4822 130 30621	1N4148
6339	4822 130 30621	1N4148
6900	4822 130 31878	1N4003G
6901	4822 130 31878	1N4003G
6902	4822 130 31878	1N4003G
6903	4822 130 31878	1N4003G
6904	4822 130 31878	1N4003G
6905	4822 130 30621	1N4148
6906	4822 130 30621	1N4148
6908	4822 130 34382	BZX79-B8V2
6909	4822 130 32245	BYV10-40
6910	4822 130 31878	1N4003G
6911	4822 130 30621	1N4148
6912	4822 130 30621	1N4148

TRANSISTORS

7251	9322 139 23687	BDX53BFP
7252	4822 130 40959	BC547B
7253	4822 130 40959	BC547B
7255	4822 130 40959	BC547B
7260	4822 130 40959	BC547B
7263	4822 130 40981	BC337-25
7265	4822 130 41691	BC556B
7266	4822 130 44568	BC557B
7268	4822 130 40959	BC547B
7280	4822 130 40959	BC547B

ELECTRICAL PARTSLIST POWER BOARD

TRANSISTORS

7282	4822 130 41327⚠	BC327-40
7286	4822 130 41327⚠	BC327-40
7323	4822 130 44461	BC546B
7324	4822 130 44461	BC546B
7325	4822 130 40959	BC547B
7326	4822 130 40959	BC547B
7327	4822 130 44461	BC546B
7350	4822 130 41691	BC556B
7901	4822 130 41246	BC327-25
7902	4822 130 40959	BC547B

INTEGRATED CIRCUITS

7281	4822 209 31841	L7805CP
7329	9322 084 99682	STK496-090C, POWER AMPLIFIER

ELECTRICAL PARTSLIST POWER SUPPLY CDR BOARD

MISCELLANEOUS

1350	4822 071 52502⚠	FUSE T 2,5A
1353	4822 071 53151⚠	FUSE 315mA

CAPACITORS

2350	4822 124 11947	10µF	20%	16V
2351	4822 124 40433	47µF	20%	25V
2352	4822 124 12328	6800µF	20%	16V
2353	4822 124 40769	4,7µF	20%	100V
2354	4822 124 80791	470µF	20%	16V
2355	4822 124 80791	470µF	20%	16V
2356	5322 121 42386	100nF	5%	63V
2357	5322 121 42386	100nF	5%	63V
2358	4822 124 81144	1000µF	20%	16V
2359	4822 124 40433	47µF	20%	25V
2360	4822 124 41584	100µF	20%	10V
2361	4822 124 23052	100µF	20%	16V
2363	4822 124 23052	100µF	20%	16V

RESISTORS

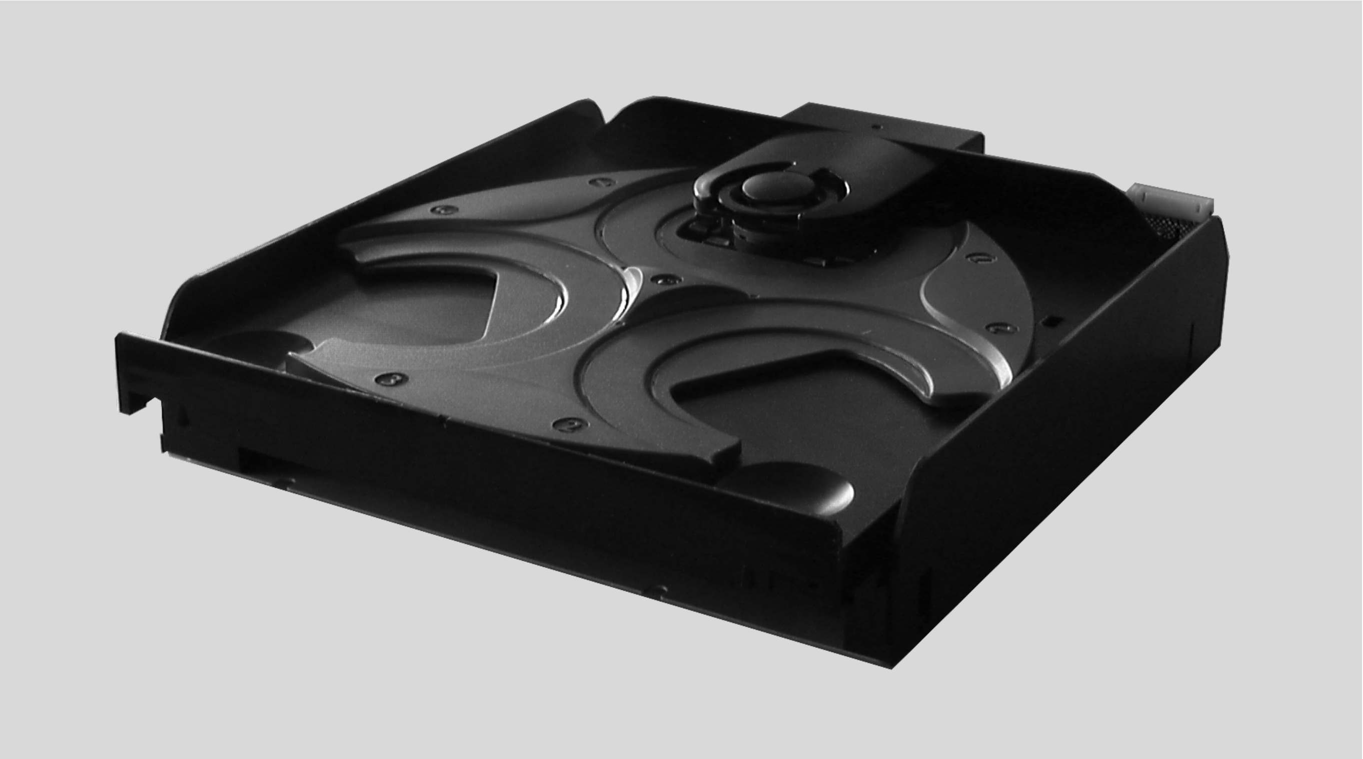
2362	4822 117 12063	10kΩ		NTC
3350	4822 116 52269	3,3kΩ	5%	0,5W
3351	4822 116 52175	100Ω	5%	0,5W
3352	4822 050 11002	1kΩ	5%	0,2W
3353	4822 050 11002	1kΩ	5%	0,2W
3354	4822 116 52234	100kΩ	5%	0,5W
3355	4822 116 52283	4,7kΩ	5%	0,5W
3356	4822 116 52175	100Ω	5%	0,5W
3357	4822 116 52206	120Ω	5%	0,5W
3358	4822 053 11151⚠	150Ω	5%	2W
3359	4822 050 21101	110Ω	1%	0,6W
3360	4822 050 11002	1kΩ	5%	0,2W
3361	4822 050 21003	10kΩ	2%	0,25W
3362	4822 116 52257	22kΩ	5%	0,5W
3363	4822 116 52226	560Ω	5%	0,5W
3364	4822 116 83883	470Ω	5%	0,16W
3365	4822 116 83872	220Ω	5%	0,5W
3366	4822 052 10568⚠	5,6Ω	5%	0,33W
3369	4822 116 52226	560Ω	5%	0,5W
3370	4822 116 52249	1,8kΩ	5%	0,16W
3371	4822 116 52234	100kΩ	5%	0,5W
3372	4822 050 11002	1kΩ	5%	0,2W
3373	4822 050 21003	10kΩ	2%	0,25W
3374	4822 116 83882	39kΩ	5%	0,5W
3375	4822 050 21003	10kΩ	2%	0,25W
3376	4822 053 11151⚠	150Ω	5%	2W

DIODES

6350	5322 130 80686	1N5392
6351	5322 130 80686	1N5392
6352	5322 130 80686	1N5392
6353	5322 130 80686	1N5392
6354	3198 010 53980	DIO REG BZX79-B3V9
6355	4822 130 34173	BZX79-B5V6
6356	5322 130 31504	BZX79-B3V3
6357	4822 130 31878	1N4003G
6358	4822 130 31878	1N4003G
6359	4822 130 30621	1N4148
6360	4822 130 31878	1N4003G
6361	4822 130 31878	1N4003G
6362	4822 130 34174	BZX79-B4V7
6363	4822 130 31981	BZX79-B3V9
6364	4822 130 34233	BZX79-B5V1
6365	4822 130 31981	BZX79-B3V9

TRANSISTORS

7350	9336 500 90126	BC557C
7351	4822 130 40995	BD438
7352	4822 130 40995	BD438
7353	4822 130 44503	BC547C
7354	4822 130 44503	BC547C
7355	4822 130 41344	BC337-40
7356	4822 130 44503	BC547C
7357	4822 130 41327	BC327-40
7358	4822 130 41246	BC327-25
7359	9336 500 90126	BC557C
7360	4822 130 44503	BC547C



3CDC99-DS Module

(3 Disc Carousel Changer)

TABLE OF CONTENTS

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Servicing Hints..10-3
Lubrication Instructions...10-4
ESD Warnings 10-6
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Component Layout 10-10
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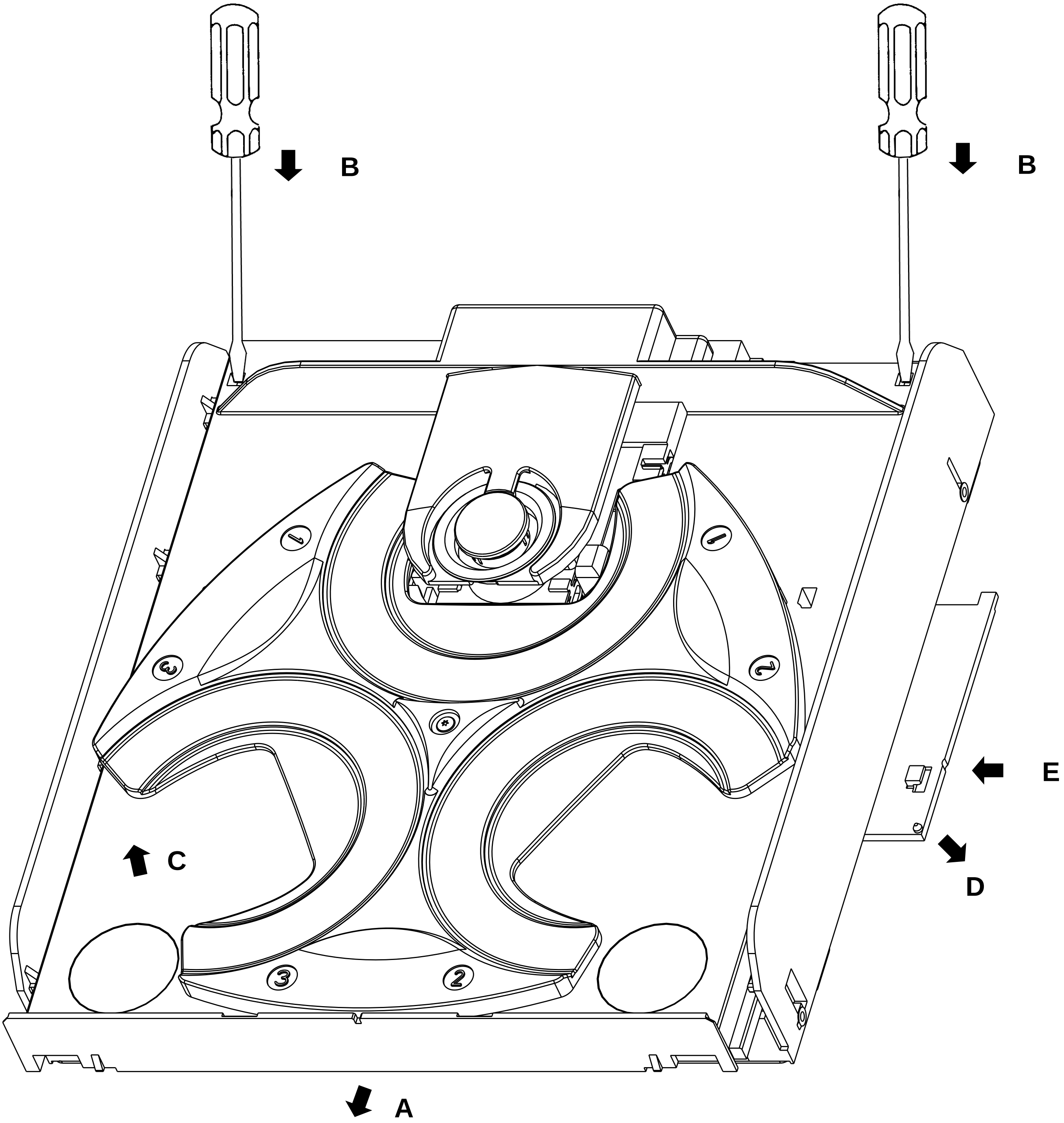
Mechanical Partslist...10-13
Electrical Partslist 10-15

Dismantling Hints



Dismantling of Drawer

→ **A** Pull drawer outwards
→ **B** Unlock drawer with screwdriver
→ **C** Lift drawer to demount from chassis

Dismantling of Flex Plate

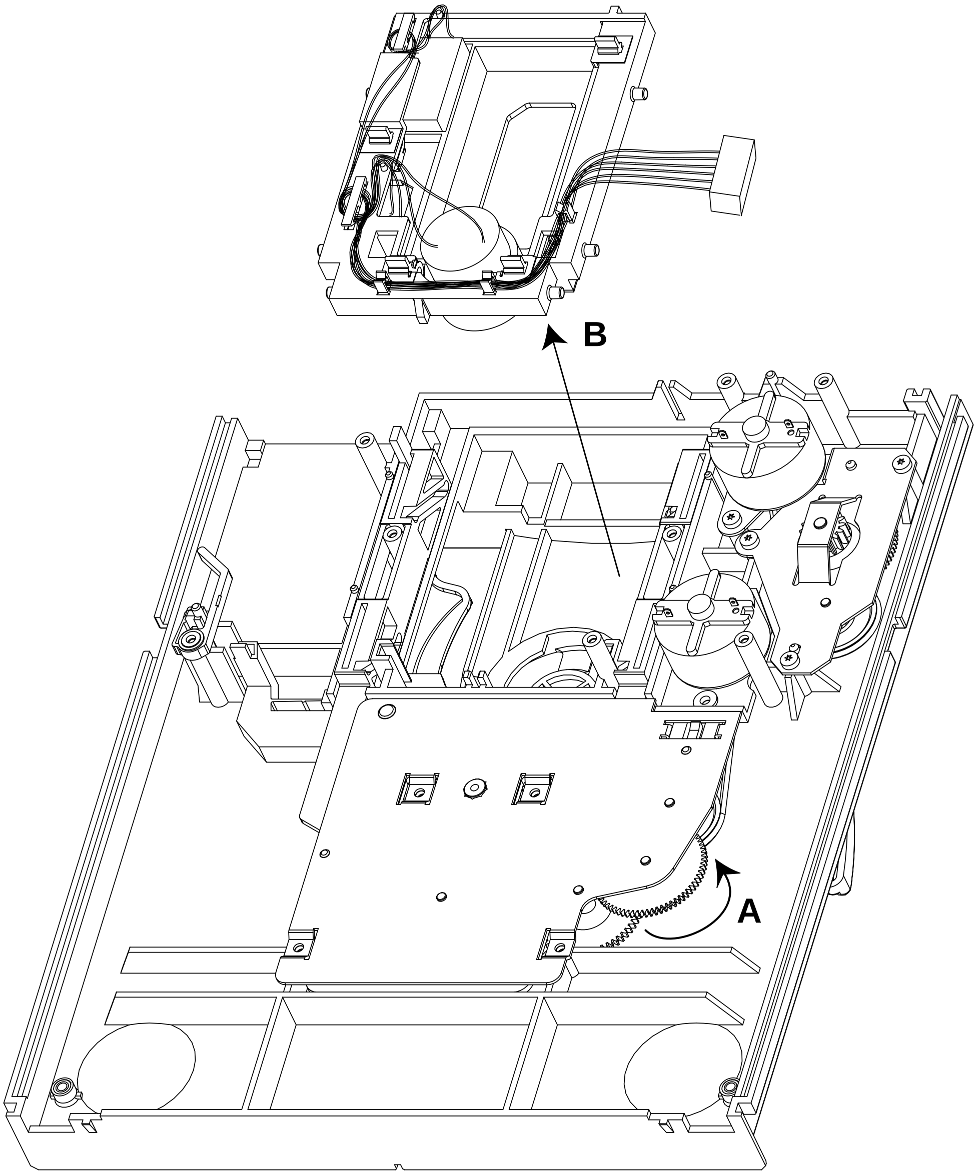
→ **D** Lift plate to unlock pin from bottom plate
→ **E** Move plate inwards to demount from bottom plate

Servicing Hints

Replacement of CD Drive

See also exploded view of changer mechanism.

1. Dismantle printed circuit board: remove 5 screws.
2. Disconnect flexfoil cable and JST connector.
   Pay attention to WARNING!
3. Loosen 2 screws (pos 107,108) and remove CD drive-lockings (pos 105,106).
4. Turn gearwheel (pos 42) of disc change mechanism by finger to move CD drive support in upper position as shown in picture below Ⓐ.
5. Dismantle CD drive support (pos 95) Ⓑ.
6. Replace CD drive (pos 100). The wire tree of JST connector has to be desoldered and resoldered on the new CD drive again.

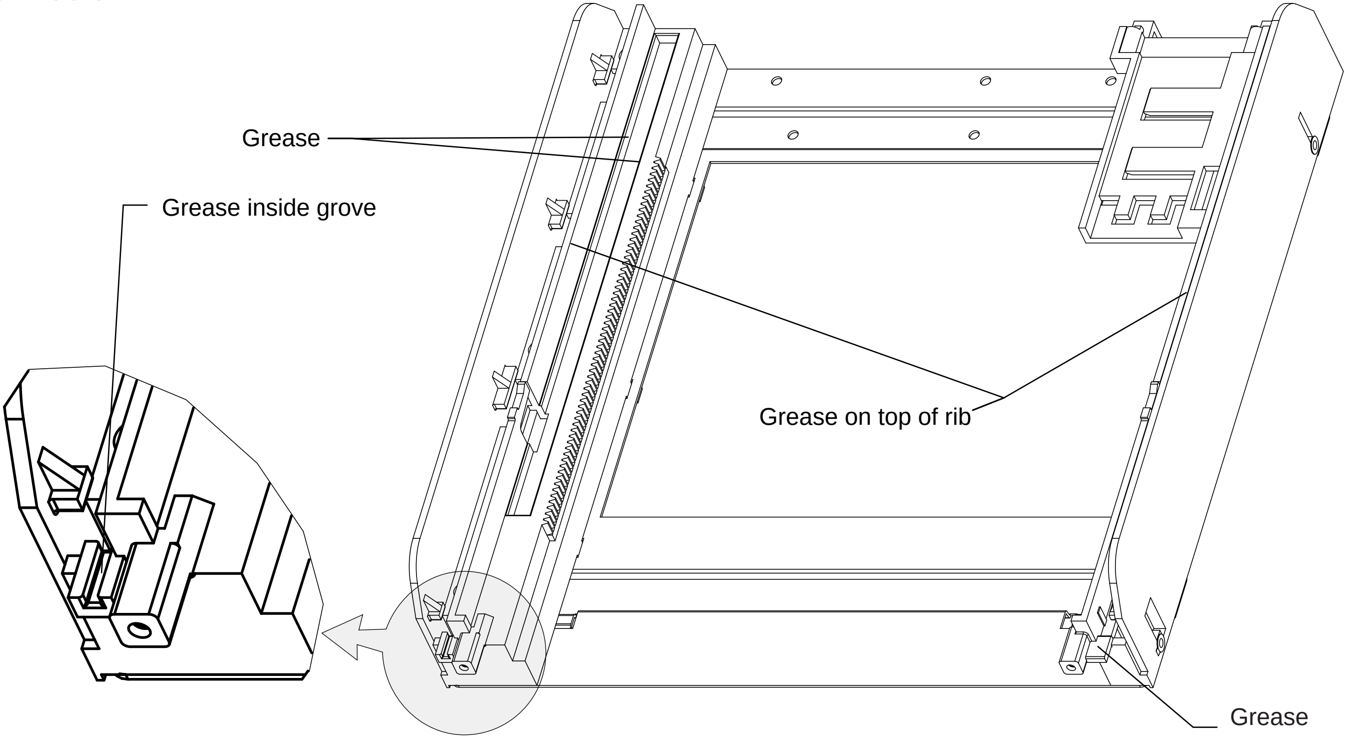


Mounting of Carousel

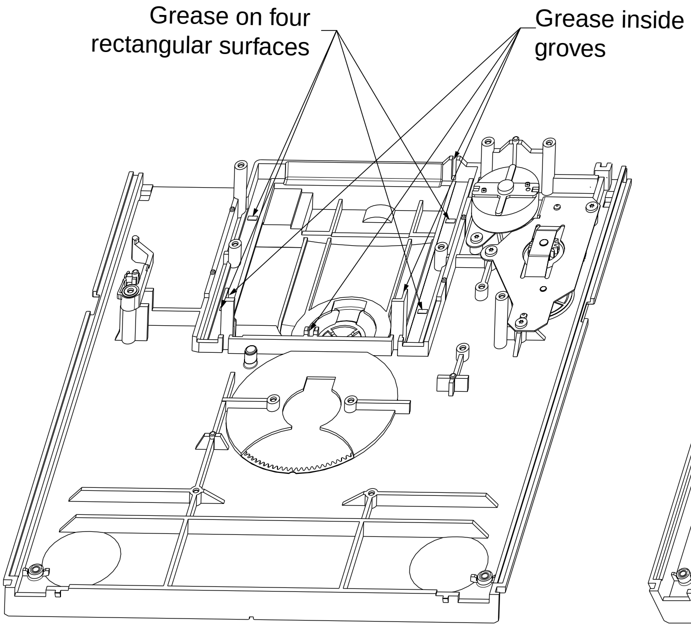
1. Turn gearwheel (pos 42) of disc change mechanism by finger until CD drive is in play position.
2. Mount carousel (pos 115) so that disc is positioned right on turntable. Carousel position number doesn´t matter.

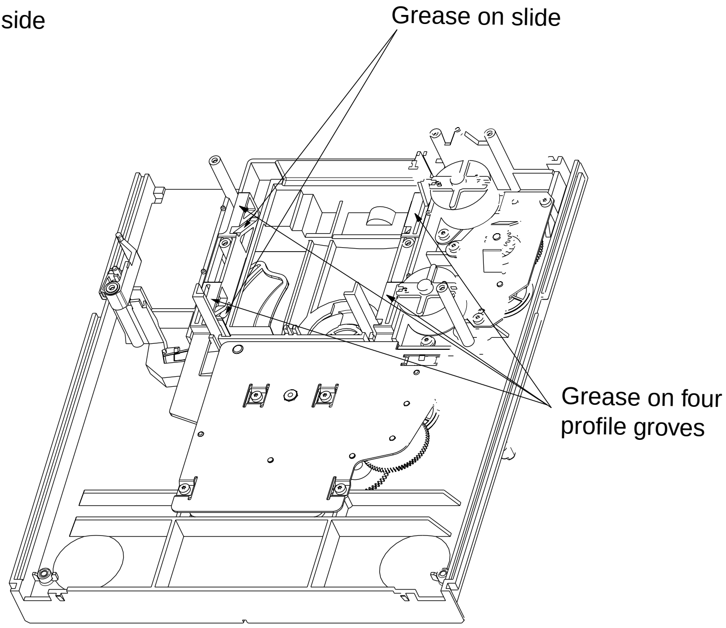
Lubrication Instructions

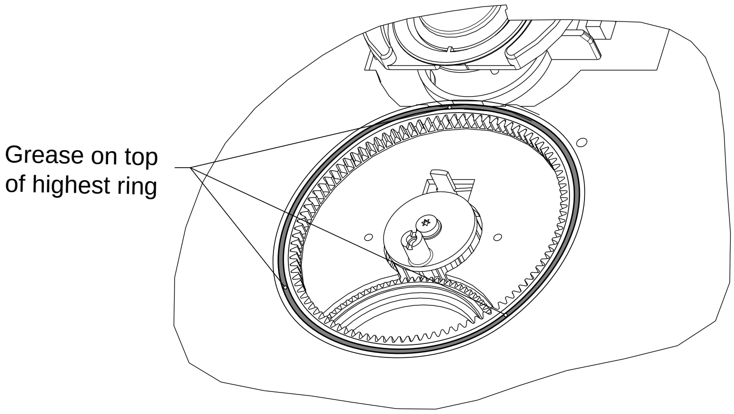
CHASSIS


Grease
Grease inside grove
Grease on top of rib
Grease

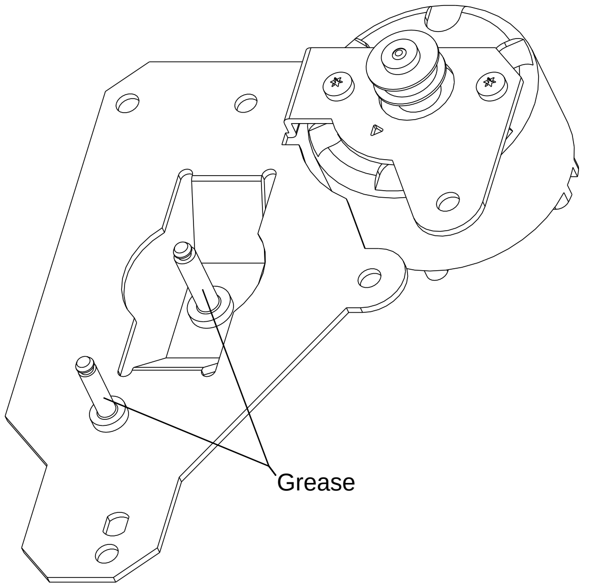
DRAWER


Grease on four rectangular surfaces
Grease inside groves

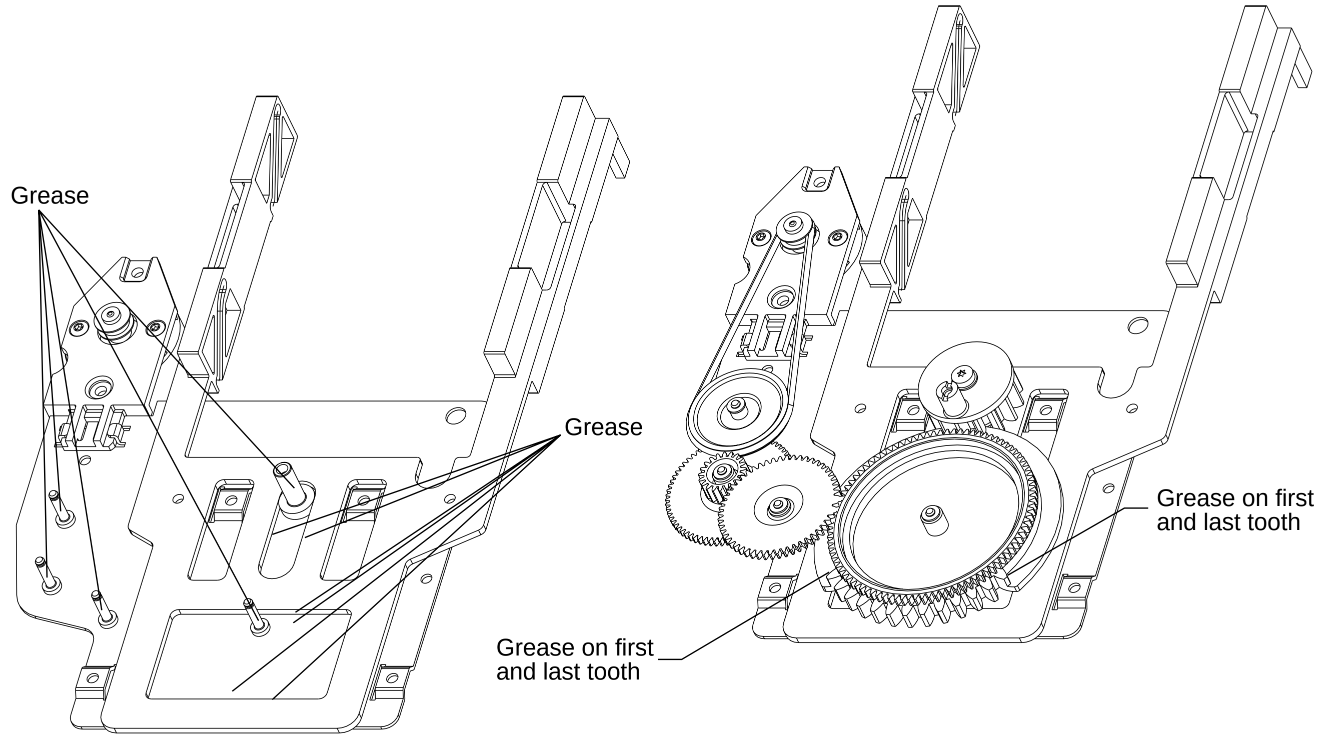

Grease on slide
Grease on four profile groves


Grease on top of highest ring

DRAWER MECHANISM



DISC CHANGE MECHANISM


Grease
Grease
Grease on first and last tooth
Grease on first and last tooth

Use only grease **Polylub GLY 801** service codenumber 4822 390 10136

WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE

- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CD mechanism:

1. Disconnect flexfoil cable from old CD drive
2. Put a paper clip onto the flexfoil cable to short-circuit connections (fig.1)
3. Remove old CD drive
4. Remove paper clip from flexfoil cable
5. Connect flexfoil cable to new CD drive
6. Position new CD drive on its studs
7. Remove soldered short-circuit from Laserunit (see below)

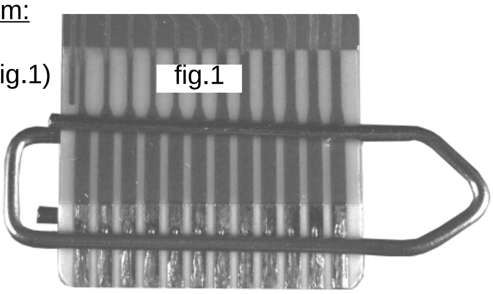
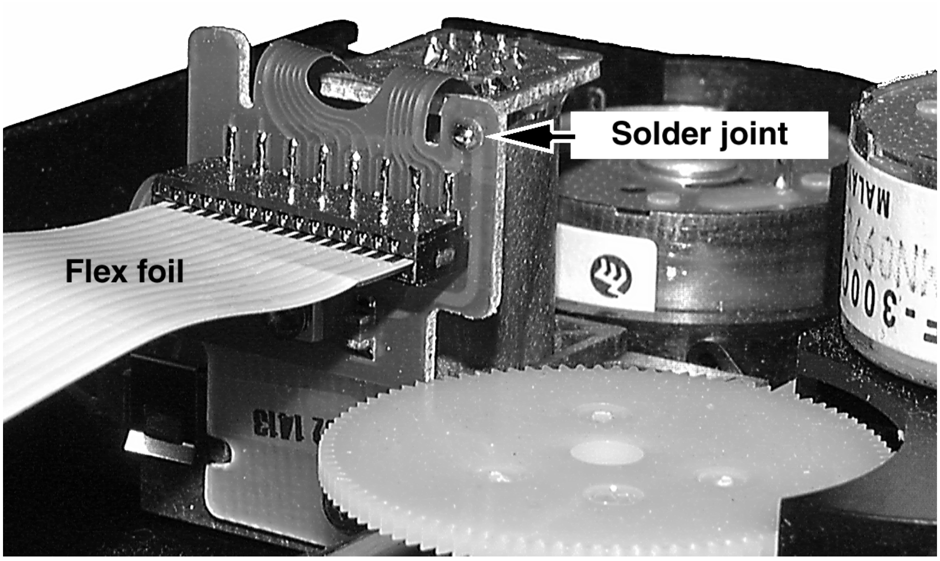
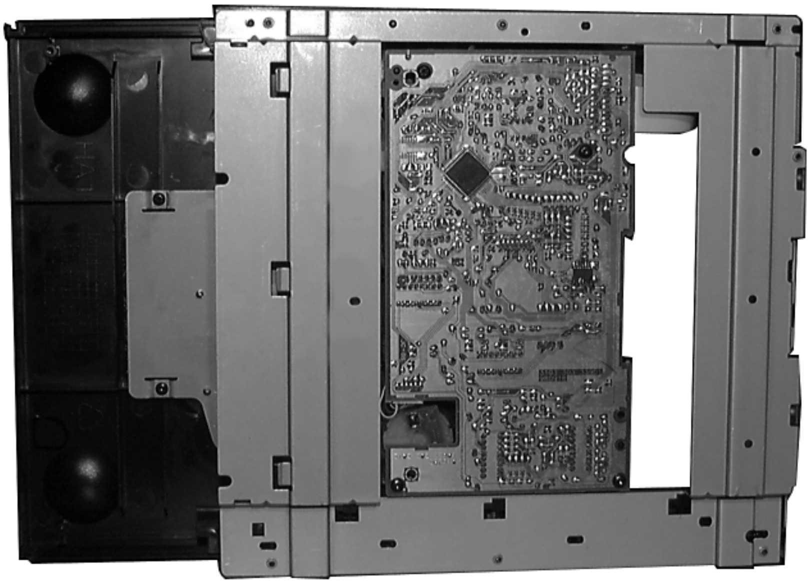


fig.1

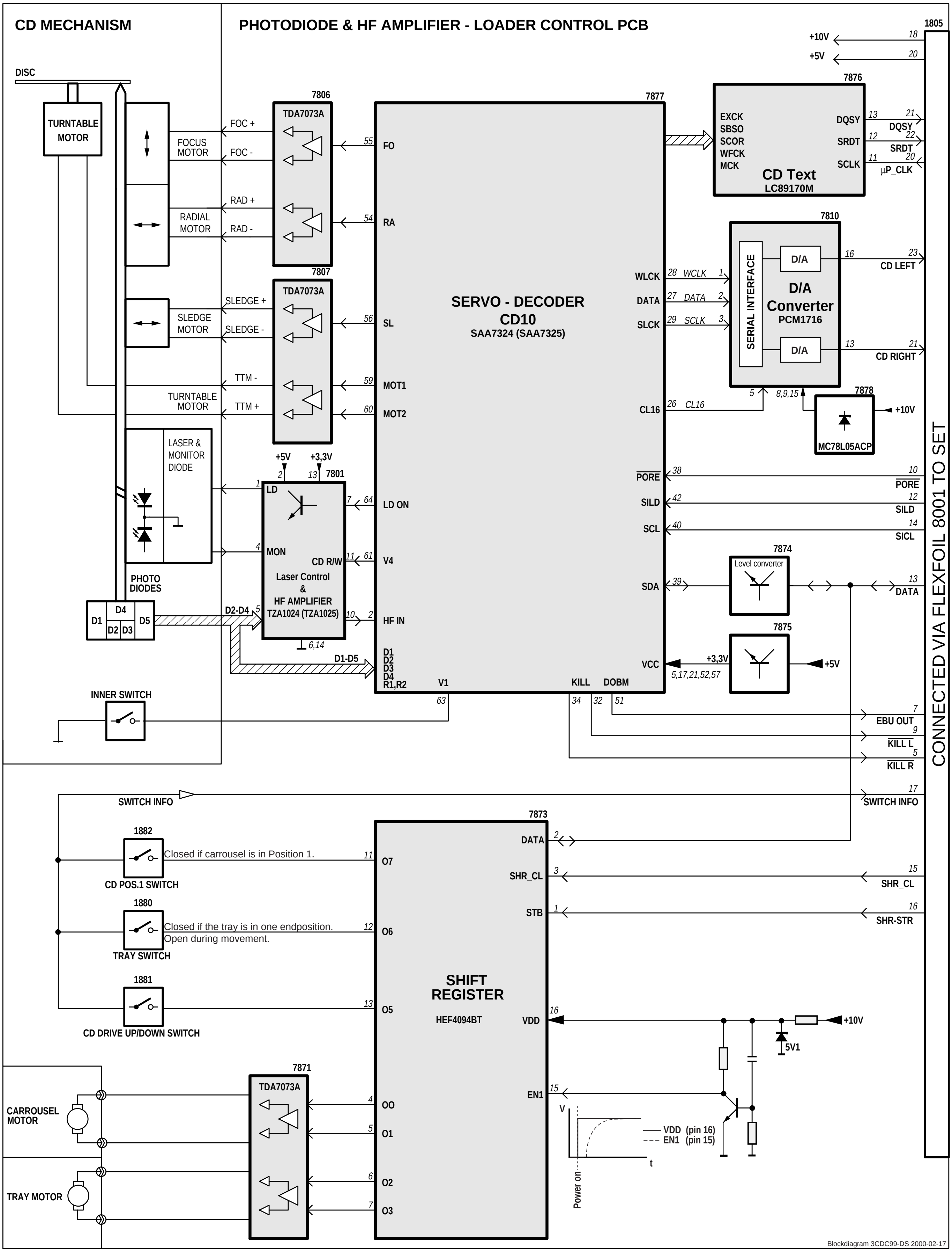
Attention: The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laser diode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connecting the drive to the set.



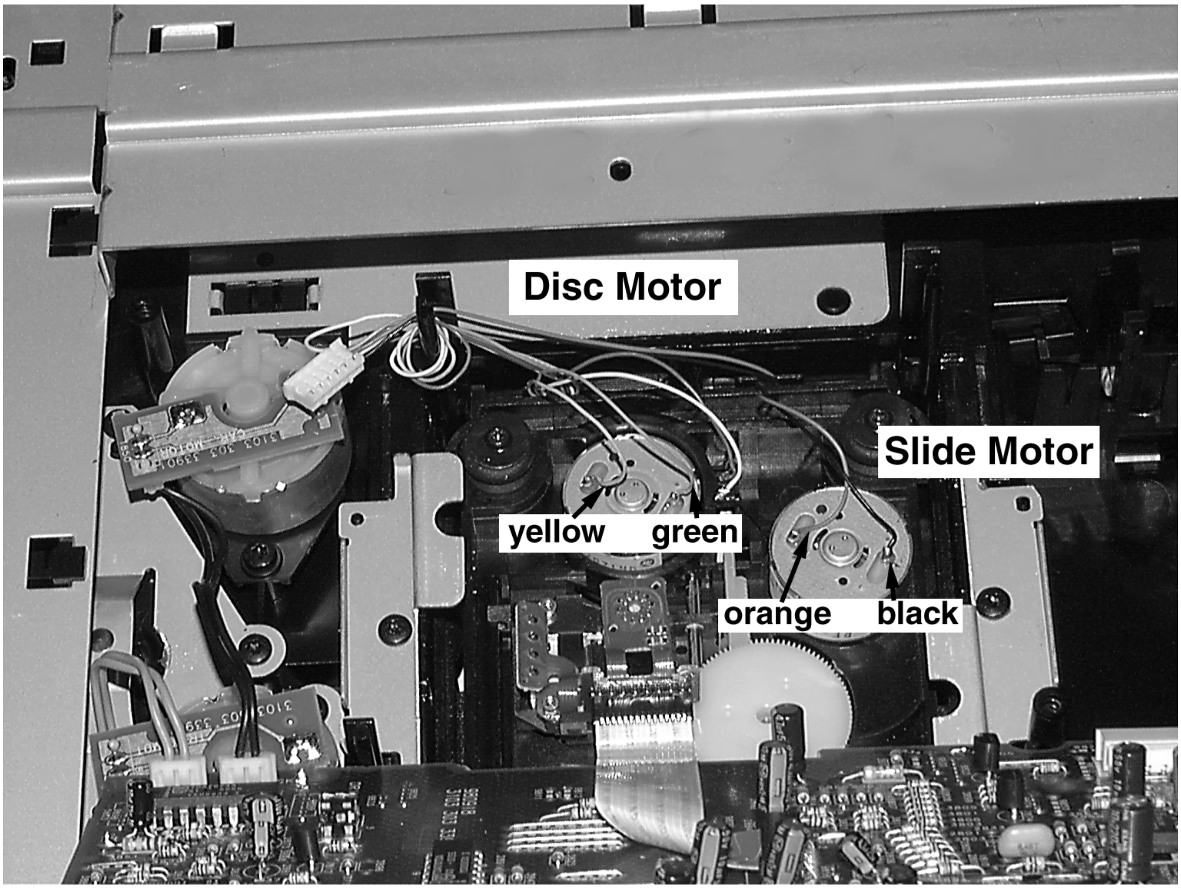
Service Position



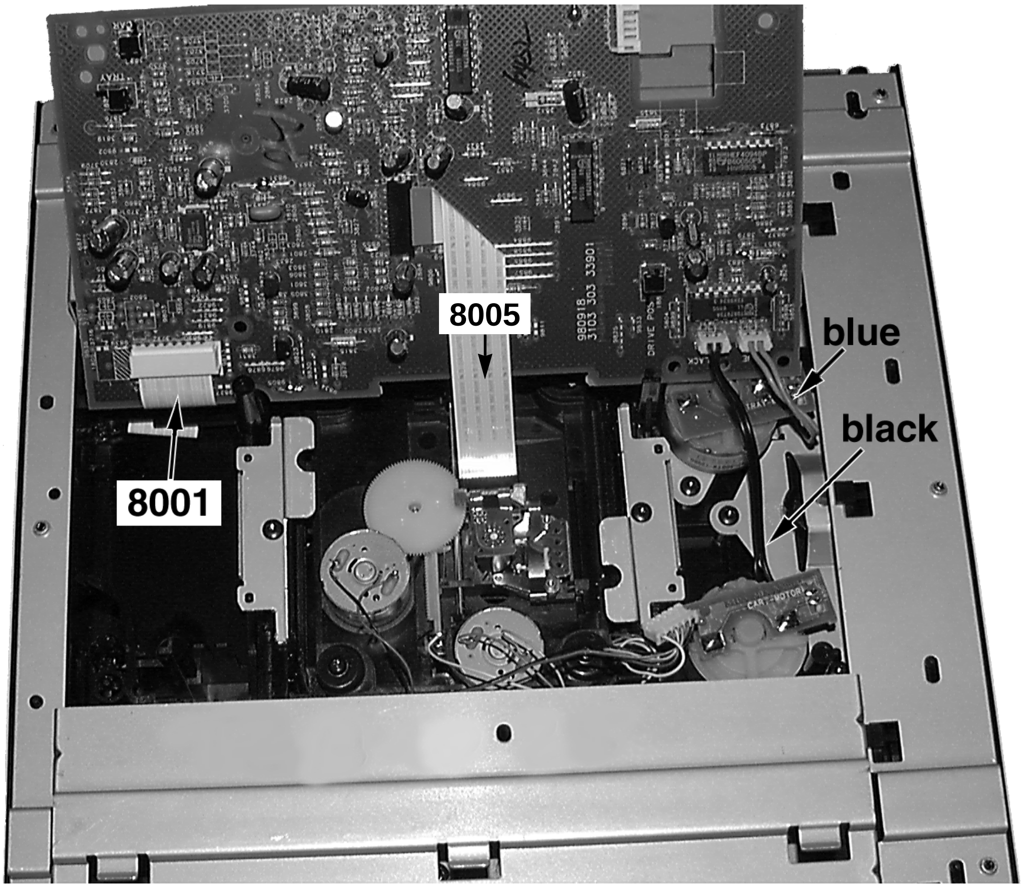
Blockdiagram


CD MECHANISM
PHOTODIODE & HF AMPLIFIER - LOADER CONTROL PCB
1805
+10V
18
+5V
20
DISC
TURNTABLE MOTOR
FOCUS MOTOR
FOC +
FOC -
RADIAL MOTOR
RAD +
RAD -
SLEDGE MOTOR
SLEDGE +
SLEDGE -
TURNTABLE MOTOR
TTM -
TTM +
LASER & MONITOR DIODE
PHOTO DIODES
D1
D2
D3
D4
D5
D2-D4
D1-D5
INNER SWITCH
7806
TDA7073A
7807
TDA7073A
7801
+5V
+3,3V
LD
MON
CD R/W
Laser Control & HF AMPLIFIER
TZA1024 (TZA1025)
6,14
7877
SERVO - DECODER
CD10
SAA7324 (SAA7325)
FO
RA
SL
MOT1
MOT2
LD ON
V4
HF IN
D1 D2 D3 D4 R1,R2
V1
KILL
DOBM
WLCK
DATA
SLCK
CL16
PORE
SILD
SCL
SDA
VCC
55
54
56
59
60
64
61
63
34
32
51
7876
EXCK
SBSO
SCOR
WFCK
MCK
DQSY
SRDT
SCLK
CD Text
LC89170M
DQSY
SRDT
µP_CLK
7810
SERIAL INTERFACE
D/A
D/A Converter
PCM1716
WCLK
DATA
SCLK
CL16
CD LEFT
CD RIGHT
7878
MC78L05ACP
+10V
8,9,15
PORE
SILD
SICL
7874
Level converter
DATA
7875
+3,3V
+5V
5,17,21,52,57
EBU OUT
KILL L
KILL R
SWITCH INFO
CONNECTED VIA FLEXFOIL 8001 TO SET
7873
1882
Closed if carrousel is in Position 1.
CD POS.1 SWITCH
1880
Closed if the tray is in one endposition.
Open during movement.
TRAY SWITCH
1881
CD DRIVE UP/DOWN SWITCH
SHIFT REGISTER
HEF4094BT
O7
O6
O5
OO
O1
O2
O3
DATA
SHR_CL
STB
VDD
EN1
SHR_CL
SHR-STR
+10V
5V1
V
t
Power on
VDD (pin 16)
EN1 (pin 15)
7871
TDA7073A
CARROUSEL MOTOR
TRAY MOTOR
Blockdiagram 3CDC99-DS 2000-02-17

Wiring of CD Drive

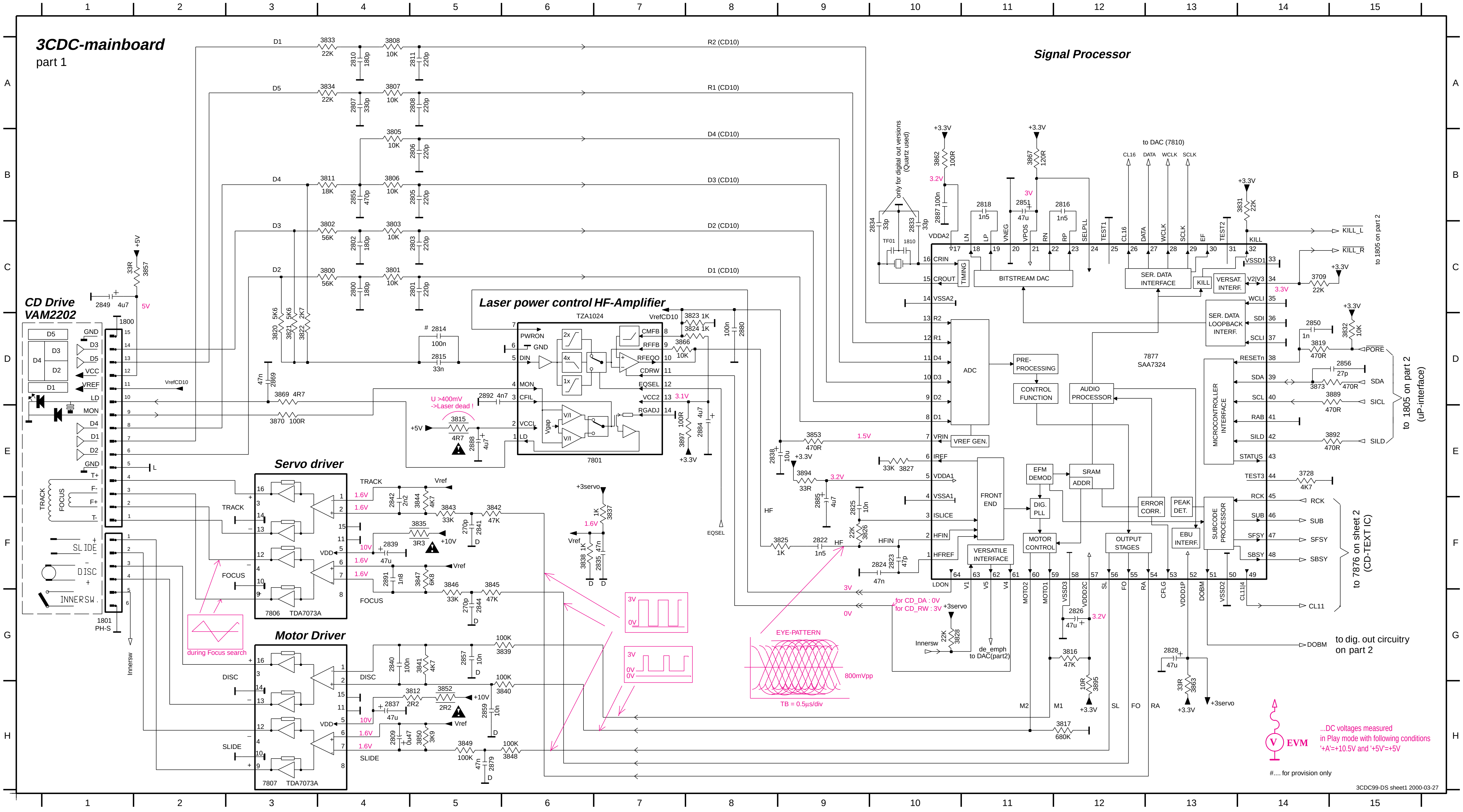

Disc Motor
Slide Motor
yellow
green
orange
black

Pict. 1

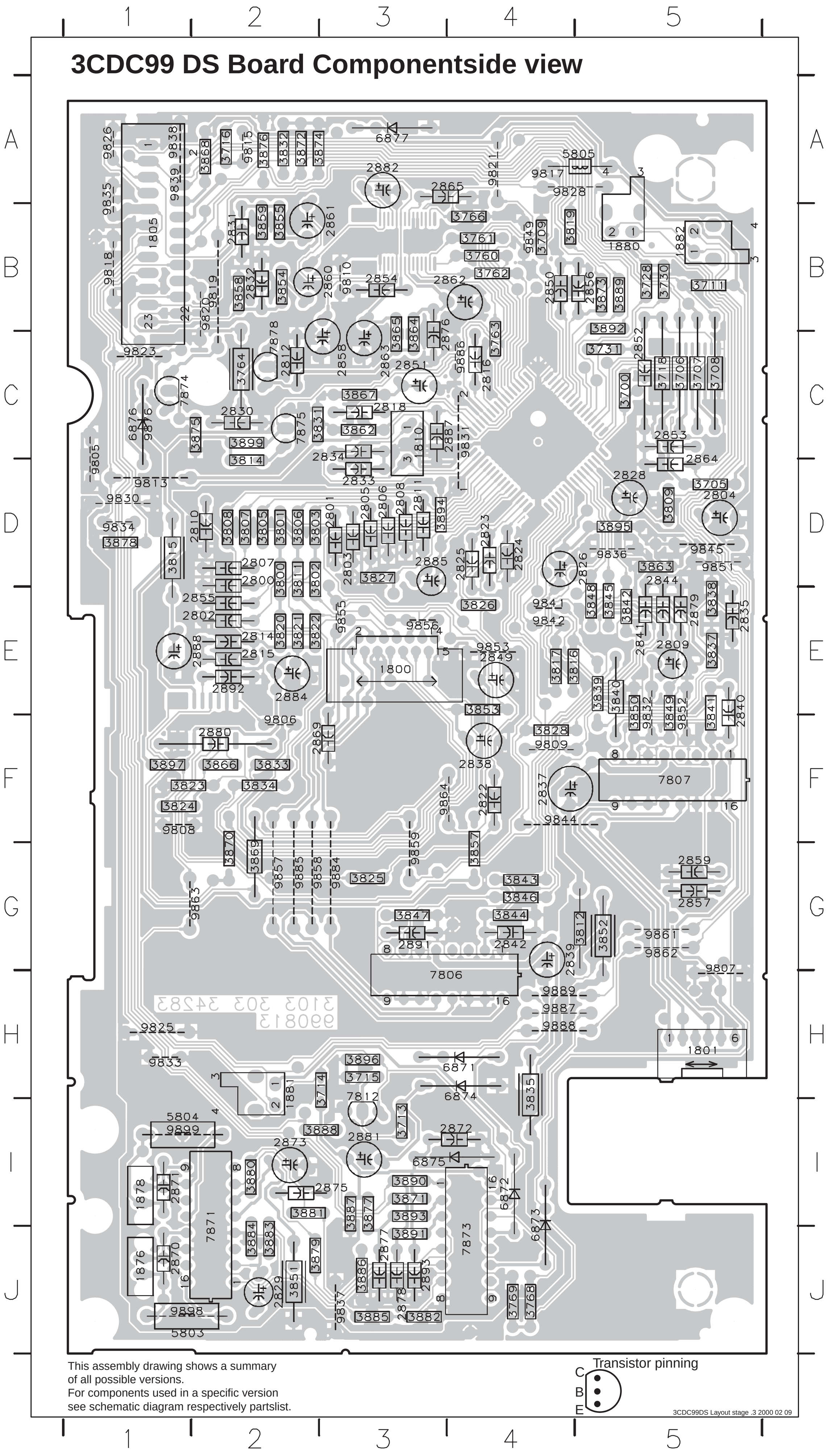

8005
8001
blue
black

Pict. 2

1800 D2	2803 C5	2810 A4	2822 F9	2833 C10	2840 G4	2851 B11	2879 H5	2891 F4	3802 C4	3811 B4	3820 D3	3826 F9	3834 A4	3841 G5	3847 F5	3857 C2	3870 E3	3897 E7
1801 G1	2805 B5	2811 A5	2823 F10	2834 C10	2841 F5	2855 B4	2880 D8	2892 D5	3803 C4	3812 H5	3821 D3	3827 E10	3835 F5	3842 F5	3848 H6	3862 B10	3873 D14	7801 E7
1810 C10	2806 B5	2814 D5	2824 F10	2835 F7	2842 F4	2856 D15	2884 E8	3709 C14	3805 B4	3815 E5	3822 D3	3828 G10	3837 F7	3843 F5	3849 H5	3863 H13	3889 D15	7806 G3
2800 C4	2807 A4	2815 D5	2825 F9	2837 H4	2844 G5	2857 G5	2885 F9	3728 E14	3806 B4	3816 G12	3823 D8	3831 B14	3838 F6	3844 F5	3850 H5	3866 D7	3892 E15	7807 H3
2801 C5	2808 A5	2816 B12	2826 G12	2838 E8	2849 C1	2859 H5	2887 B10	3800 C4	3807 A4	3817 H12	3824 D8	3832 D15	3839 G6	3845 F5	3852 H5	3867 B11	3894 E9	7877 D12
2802 C4	2809 H4	2818 B11	2828 G13	2839 F4	2850 D14	2869 D3	2888 E5	3801 C4	3808 A4	3819 D14	3825 F9	3833 A4	3840 H6	3846 F5	3853 E9	3869 D3	3895 H12	


3CDC-mainboard
part 1
Signal Processor
CD Drive VAM2202
Laser power control HF-Amplifier
TZA1024
Servo driver
Motor Driver
7806 TDA7073A
7807 TDA7073A
7801
7877 SAA7324
1800
1801 PH-S
1810
D1 D5 D4 D3 D2
R2 (CD10)
R1 (CD10)
D4 (CD10)
D3 (CD10)
D2 (CD10)
D1 (CD10)
VrefCD10
PWRON GND DIN MON CFIL VCC LD
CMFB RFFB RFEQO CDRW EQSEL VCC2 RGADJ
U >400mV ->Laser dead !
TRACK FOCUS DISC SLIDE
SL IDE DISC INNERSW
Innersw
during Focus search
EYE-PATTERN
800mVpp
TB = 0.5µs/div
3V 0V
1.6V 10V 3.1V 3.2V 1.5V 3V 5V
ADC
PRE-PROCESSING
CONTROL FUNCTION
AUDIO PROCESSOR
BITSTREAM DAC
SER. DATA INTERFACE
KILL
VERSAT. INTERF.
SER. DATA LOOPBACK INTERF.
MICROCONTROLLER INTERFACE
VREF GEN.
FRONT END
EFM DEMOD
SRAM
ADDR
DIG. PLL
MOTOR CONTROL
VERSATILE INTERFACE
ERROR CORR.
PEAK DET.
EBU INTERF.
OUTPUT STAGES
SUBCODE PROCESSOR
TIMING
to DAC (7810)
CL16 DATA WCLK SCLK
only for digital out versions (Quartz used)
KILL_L
KILL_R
to 1805 on part 2
to 1805 (uP-interface)
PORE SDA SICL SILD
RCK SUB SFSY SBSY CL11
to 7876 on sheet 2 (CD-TEXT IC)
DOBM
to dig. out circuitry on part 2
for CD_DA : 0V
for CD_RW : 3V
de_emph to DAC(part2)
+3servo
+3.3V
EVM
...DC voltages measured in Play mode with following conditions '+A'=+10.5V and '+5V'=+5V
#.... for provision only
3CDC99-DS sheet1 2000-03-27

3CDC99 DS Board Componentside view

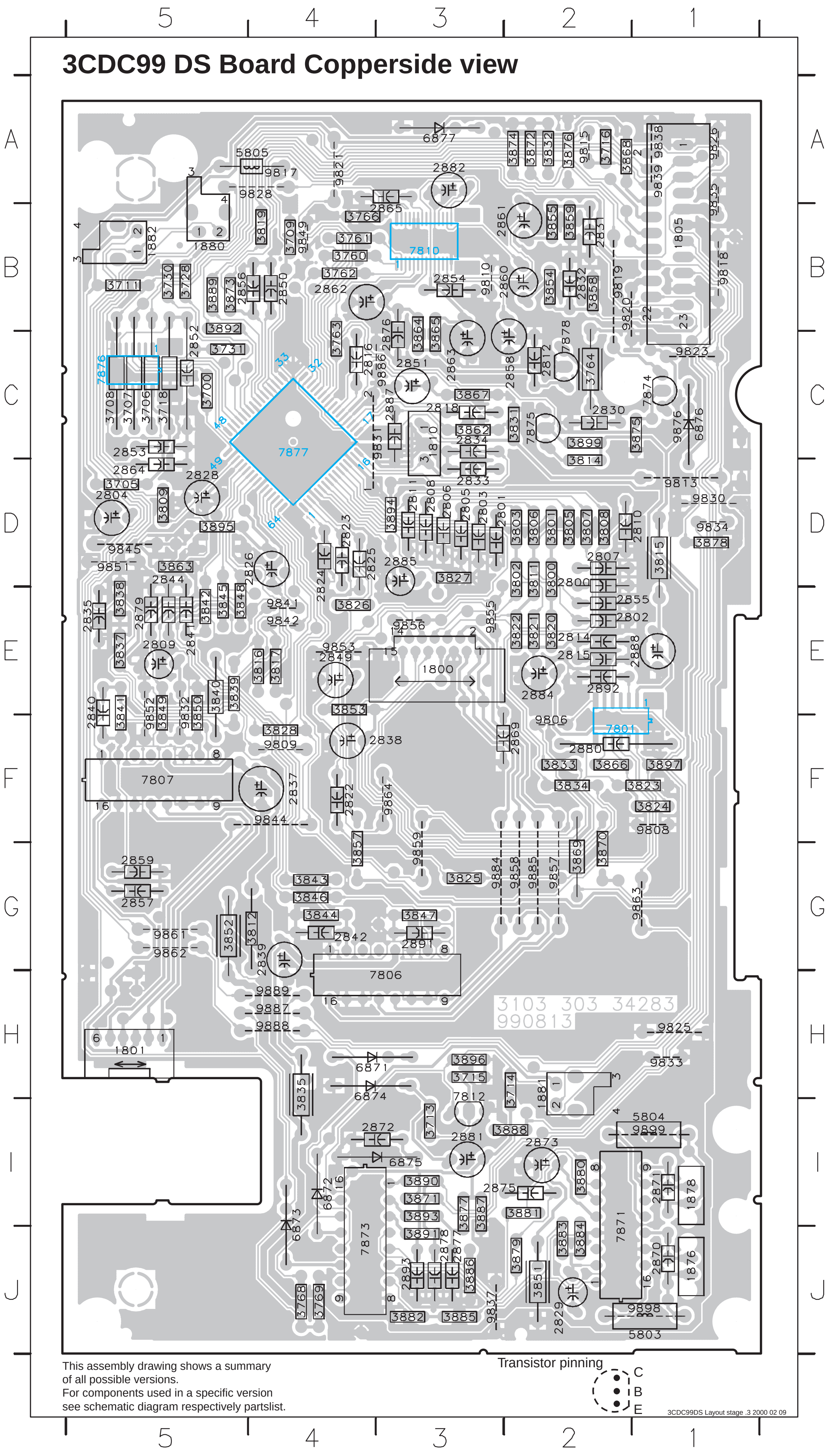

3CDC99 DS Board Componentside view
1
2
3
4
5
A
B
C
D
E
F
G
H
I
J
1800
1801
1805
1810
7806
7807
7871
7873
3103 303 34283
990813
Transistor pinning
C
B
E
3CDC99DS Layout stage .3 2000 02 09

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

Mapping

1800	E3
1801	H5
1805	A1
1810	D3
1876	J1
1878	I1
1880	A5
1881	I2
1882	B5
2800	D2
2801	D3
2802	E2
2803	D3
2804	D5
2805	D3
2806	D3
2807	D2
2808	D3
2809	E5
2810	D2
2811	D3
2812	C2
2814	E2
2815	E1
2816	C4
2818	C3
2822	F4
2823	D4
2824	D4
2825	D4
2826	D4
2828	D5
2829	J2
2830	C2
2831	B2
2832	B2
2833	D2
2834	C2
2835	E5
2837	F4
2838	F4
2839	H4
2840	E5
2841	E5
2842	G4
2844	E5
2849	E4
2850	B4
2851	C3
2852	C5
2853	C5
2854	B3
2855	E2
2856	C4
2857	G5
2858	C3
2859	G5
2860	B3
2861	A2
2862	B4
2863	C3
2864	D5
2865	A3
2869	F2
2870	J1
2871	I1
2872	I4
2873	I2
2875	I3
2876	B3
2877	J3
2878	J3
2879	E5
2880	F2
2881	I3
2882	A3
2884	E2
2885	E3
2887	C4
2888	E1
2891	G3
2892	E2
2893	J3
3700	C5
3705	D5
3706	C5
3707	C5
3708	C5
3709	B4
3711	B5
3713	I3
3714	H2
3715	H3
3716	A2
3718	C5
3728	B5
3730	B5
3731	C5
3760	B3
3761	B3
3762	B3
3763	C4
3764	C2
3766	B3
3768	J4
3769	J4
3800	D2
3801	D2
3802	D3
3803	D2
3805	D2
3806	D2
3807	D2
3808	D2
3809	D5
3811	D2
3812	G4
3814	D2
3815	D1
3816	E5
3817	E4
3819	B5
3820	E2
3821	E2
3822	E3
3823	F1
3824	F1
3825	G3
3826	E4
3827	E3
3828	F4
3831	C2
3832	A2
3833	F2
3834	F2
3835	H4
3837	E5
3838	D5
3839	E5
3840	E5
3841	E5
3842	E5
3843	G4
3844	G4
3845	E5
3846	G4
3847	G3
3848	E5
3849	E5
3850	E5
3851	J2
3852	G5
3853	F4
3854	B2
3855	B2
3857	G4
3858	B2
3859	A2
3862	C3
3863	D5
3864	B3
3865	C3
3866	F2
3867	C3
3868	B2
3869	G2
3870	G2
3871	I3
3872	A2
3873	B5
3874	A3
3875	C1
3876	A2
3877	I3
3878	D1
3879	J3
3880	I2
3881	I2
3882	J3
3883	J2
3884	I2
3885	J3
3886	J3
3887	I3
3888	I3
3889	B5
3890	I3
3891	I3
3892	C4
3893	I3
3894	D4
3895	D5
3896	H3
3897	F1
3899	C2
5803	J1
5804	I1
5805	A5
6871	H4
6872	I4
6873	I4
6874	H4
6875	I4
6876	C1
6877	A3
7801	F2
7806	H3
7807	F5
7810	B3
7812	H3
7871	I1
7873	J4
7874	C1
7875	C2
7876	C5
7877	C4
7878	C2
9805	C1
9806	E2
9807	G5
9808	F1
9809	F4
9810	B3
9813	D1
9815	A2
9817	A5
9818	B1
9819	B2
9820	B2
9821	A4
9823	C1
9825	H1
9826	A1
9828	A5
9830	D1
9831	C4
9832	E5
9833	H1
9834	D1
9835	A1
9836	D5
9837	J3
9838	A1
9839	A1
9841	E4
9842	E4
9844	F4
9845	D5
9849	A4
9851	D5
9852	E5
9853	E4
9855	E3
9856	E3
9857	G2
9858	G3
9859	G3
9861	G5
9862	G5
9863	G2
9864	F3
9876	C1
9884	G3
9885	G2
9886	C3
9887	H4
9888	H4
9889	H4
9898	J1
9899	I1

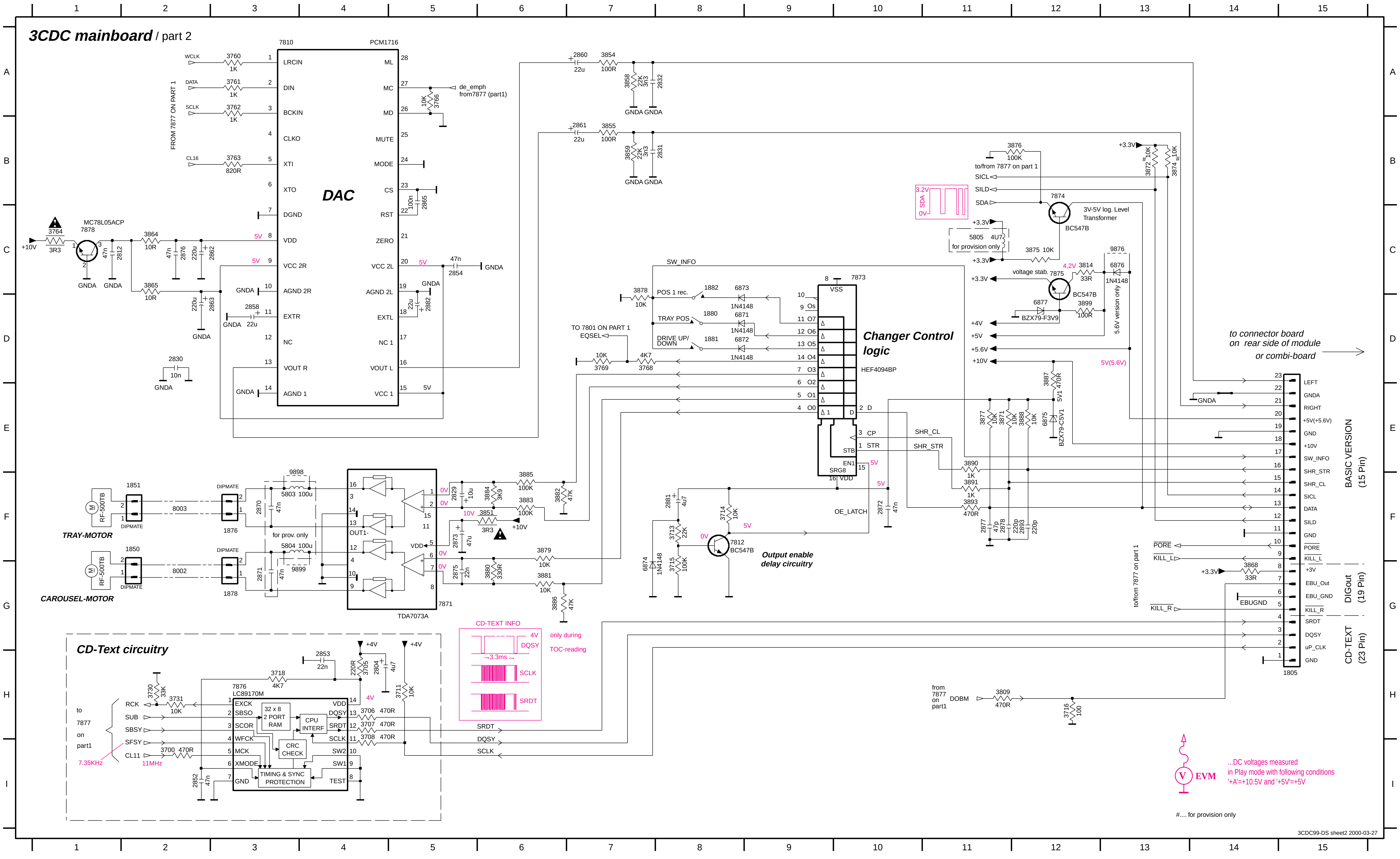
3CDC99 DS Board Copperside view


3CDC99 DS Board Copperside view
5
4
3
2
1
A
B
C
D
E
F
G
H
I
J
7801
7810
7876
7877
7806
7807
7871
7873
1800
1801
1805
1810
3103 303 34283
990813
Transistor pinning
C
B
E
3CDC99DS Layout stage .3 2000 02 09

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

1805	H15
1876	F3
1878	G3
1880	D8
1881	D8
1882	C8
2804	H4
2812	C1
2829	F5
2830	D2
2831	B8
2832	A8
2852	I2
2853	H4
2854	C5
2858	D3
2860	A7
2861	B7
2862	C2
2863	D2
2864	H12
2865	B5
2870	F3
2871	G3
2872	F10
2873	F5
2875	G5
2876	C2
2877	F11
2878	F11
2881	F8
2882	D5
2893	F12
3700	I2
3705	H4
3706	H4
3707	H4
3708	H4
3711	H5
3713	F8
3714	F8
3715	G8
3716	H12
3718	H3
3730	H2
3731	H2
3760	A3
3761	A3
3762	A3
3763	B3
3764	C1
3766	A5
3768	D7
3769	D7
3809	H11
3814	C12
3851	F6
3854	A7
3855	B7
3858	A7
3859	B7
3864	C2
3865	C2
3868	G14
3871	E11
3872	B13
3874	B13
3875	C12
3876	B12
3877	E11
3878	C7
3879	F6
3880	G6
3881	G6
3882	F6
3883	F6
3884	F6
3885	E6
3886	G6
3887	D12
3888	E12
3890	E11
3891	F11
3893	F11
3896	G10
3899	D12
5803	F3
5804	F3
5805	C11
6871	D8
6872	D8
6873	C8
6874	G7
6875	E12
6876	C13
6877	D12
7810	A3
7812	F8
7871	G5
7873	C10
7874	B12
7875	C12
7876	H3
7878	C1
9826	H14
9834	F10
9835	G11
9838	C14
9839	C14
9876	C13
9898	E3
9899	G3

3CDC mainboard / part 2


1
2
3
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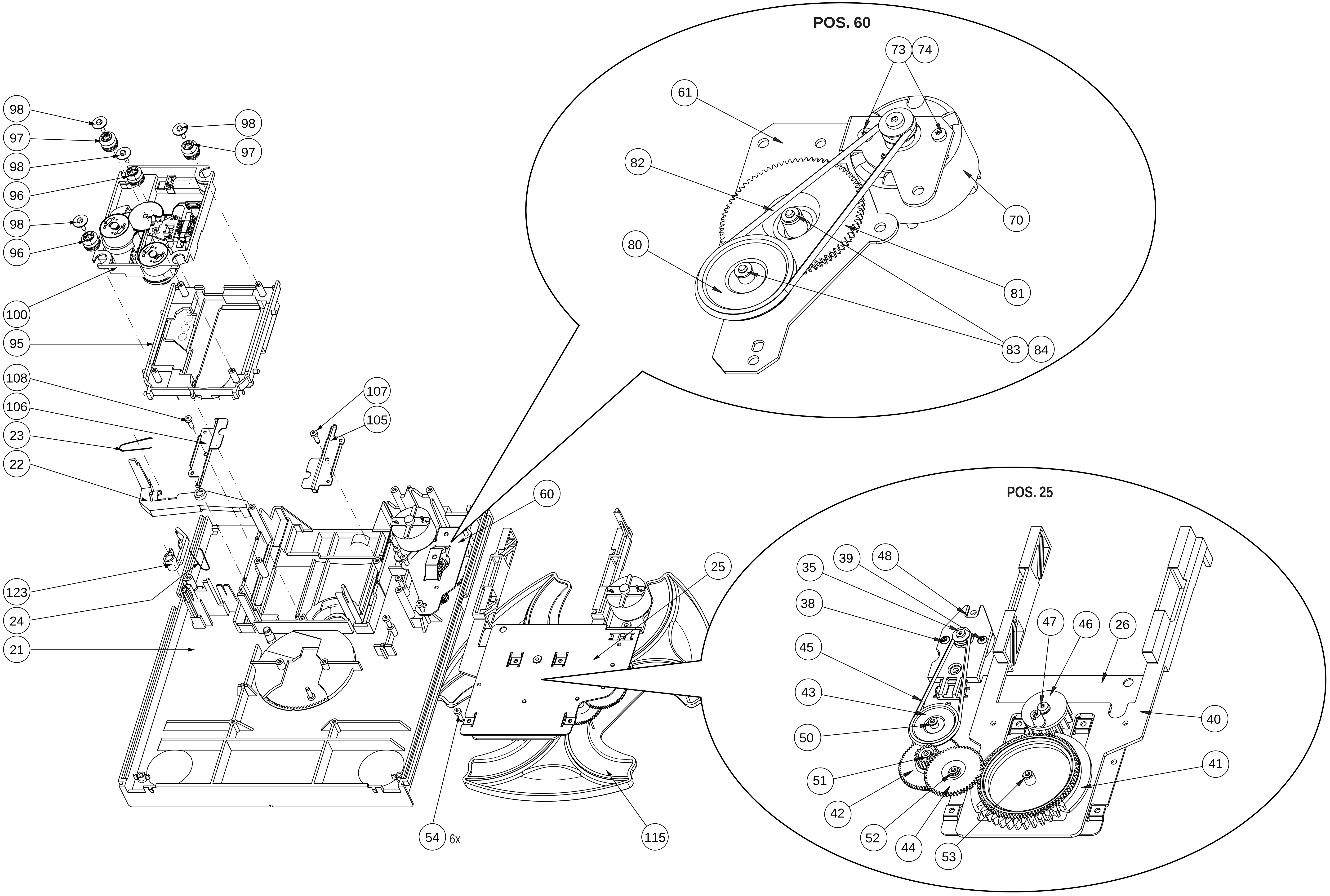
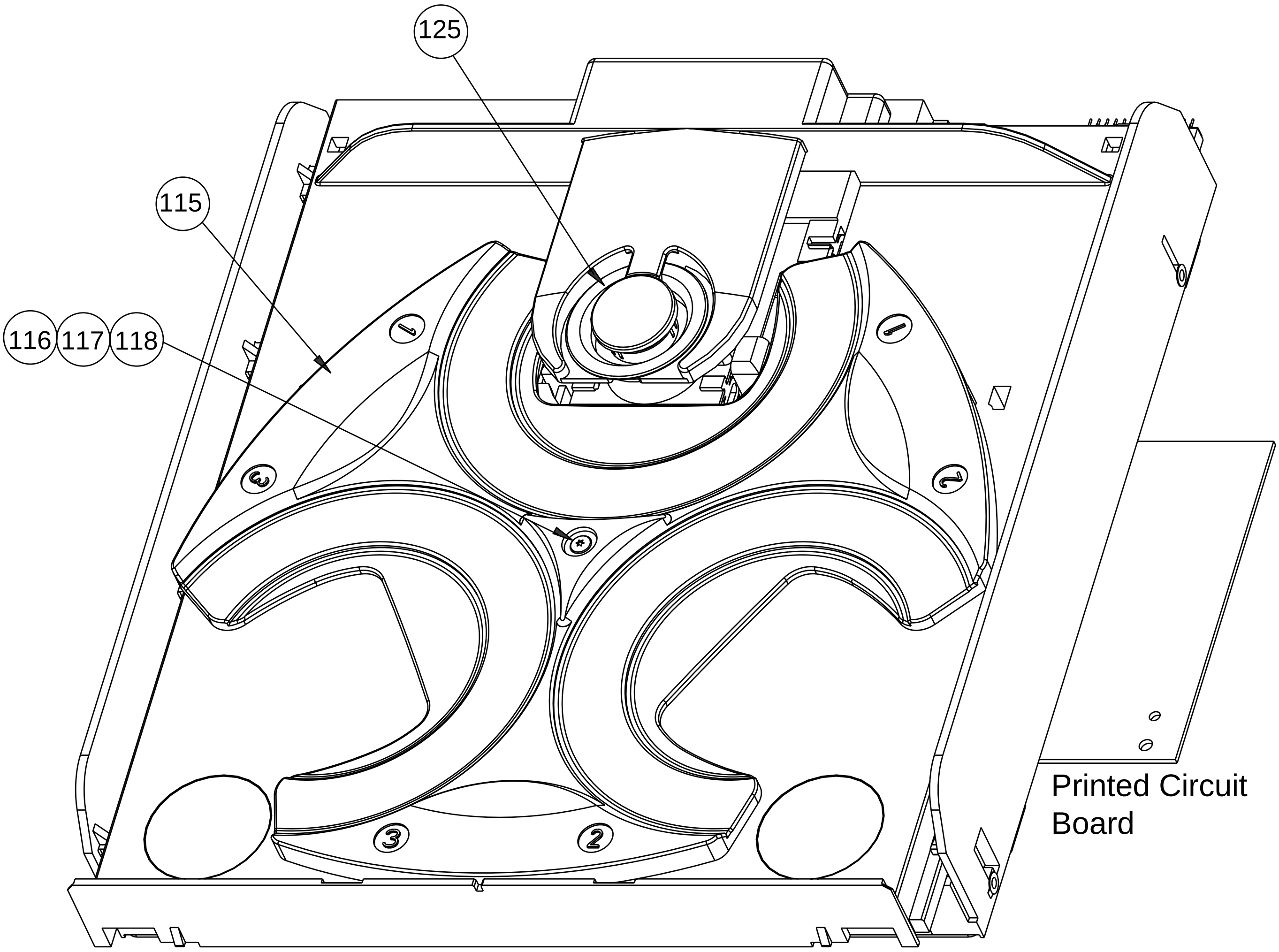
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
7810
PCM1716
DAC
WCLK
DATA
SCLK
CL16
FROM 7877 ON PART 1
3760 1K
3761 1K
3762 1K
3763 820R
LRCIN
DIN
BCKIN
CLKO
XTI
XTO
DGND
VDD
VCC 2R
AGND 2R
EXTR
NC
VOUT R
AGND 1
ML
MC
MD
MUTE
MODE
CS
RST
ZERO
VCC 2L
AGND 2L
EXTL
NC 1
VOUT L
VCC 1
de_emph
from7877 (part1)
10K 3766
100n 2865
47n 2854
22u 2882
2858 22u
5V
GNDA
MC78L05ACP
7878
3764 3R3
+10V
47n 2812
3864 10R
47n 2876
220u 2862
3865 10R
220u 2863
2830 10n
2860 22u
3854 100R
3858 22K
3n3 2832
2861 22u
3855 100R
3859 22K
3n3 2831
SW_INFO
3878 10K
POS 1 rec.
1882
6873 1N4148
TRAY POS
1880
6871 1N4148
DRIVE UP/DOWN
1881
6872 1N4148
TO 7801 ON PART 1
EQSEL
10K 3769
4K7 3768
7873
VSS
Os
O7
O6
O5
O4
O3
O2
O1
O0
D
CP
STR
STB
EN1
SRG8
VDD
Changer Control logic
HEF4094BP
SHR_CL
SHR_STR
3876 100K
to/from 7877 on part 1
SICL
SILD
SDA
3.2V
0V
7874
3V-5V log. Level Transformer
BC547B
+3.3V
5805 4U7
for provision only
3875 10K
voltage stab. 7875
4,2V
3814 33R
9876
6876 1N4148
5.6V version only
6877 BZX79-F3V9
3899 100R
+4V
+5V
+5.6V
+10V
5V(5.6V)
3872 10K #
3874 10K #
3887 470R
5V1
6875 BZX79-C5V1
3877 10K
3871 10K
3888 10K
3890 1K
3891 1K
3893 470R
2877 47p
2878 220p
2893 220p
to connector board on rear side of module or combi-board
1805
LEFT
GNDA
RIGHT
+5V(+5.6V)
GND
+10V
SW_INFO
SHR_STR
SHR_CL
SICL
DATA
SILD
GND
PORE
KILL_L
+3V
EBU_Out
EBU_GND
KILL_R
SRDT
DQSY
uP_CLK
GND
BASIC VERSION (15 Pin)
DIGout (19 Pin)
CD-TEXT (23 Pin)
to/from 7877 on part 1
3868 33R
EBUGND
1851
1850
RF-500TB
M
DIPMATE
8003
8002
1876
1878
TRAY-MOTOR
CAROUSEL-MOTOR
9898
5803 100u
5804 100u
9899
2870 47n
2871 47n
for prov. only
TDA7073A
7871
OUT1-
VDD
0V
10V
2829 10u
3884 3K9
3885 100K
3883 100K
3882 47K
3851 3R3
2873 47u
2875 22n
3880 330R
3879 10K
3881 10K
3886 47K
2881 4u7
3714 10K
3713 22K
3715 100K
6874 1N4148
7812 BC547B
OE_LATCH
2872 47n
Output enable delay circuitry
CD-TEXT INFO
4V
DQSY
3.3ms
SCLK
SRDT
only during TOC-reading
CD-Text circuitry
to 7877 on part1
RCK
SUB
SBSY
SFSY
CL11
7.35KHz
11MHz
3730 33K
3731 10K
3700 470R
2852 47n
7876
LC89170M
EXCK
SBSO
SCOR
WFCK
MCK
XMODE
GND
32 x 8 2 PORT RAM
CPU INTERF
CRC CHECK
TIMING & SYNC PROTECTION
VDD
DQSY
SRDT
SCLK
SW2
SW1
TEST
3718 4K7
2853 22n
220R 3705
2804 4u7
3711 10K
3706 470R
3707 470R
3708 470R
from 7877 on part1
DOBM
3809 470R
3716 100
V EVM
...DC voltages measured in Play mode with following conditions '+A'=+10.5V and '+5V'=+5V
#.... for provision only
3CDC99-DS sheet2 2000-03-27


POS. 60
POS. 25
54 6x



MECHANICAL PARTSLIST 3CDC-99 MODULE

0003	4822 463 11235	GUIDING LEFT	0040	4822 463 11237	SLIDE
0004	4822 463 11236	GUIDING RIGHT	0041	4822 522 10509	CONTROL DISC
0012	4822 466 12146	RUBBER	0042	4822 522 10492	GEAR WHEEL
0013	4822 466 12146	RUBBER	0043	4822 528 10937	PULLEY
0021	4822 418 10403	DRAWER	0044	4822 522 10493	IDLER WHEEL
0022	4822 402 11236	BRACKET TUMBLER	0045	4822 358 10115	BELT
0023	4822 492 11721	SPRING	0046	4822 466 10735	ECCENTRIC GEAR WHEEL
0024	4822 492 11721	SPRING	0050	4822 532 12364	WASHER
0038	4822 502 12548	SCREW M2,6x3,5	0051	4822 532 12364	WASHER
0039	4822 502 12548	SCREW M2,6X3,5	0052	4822 532 12364	WASHER

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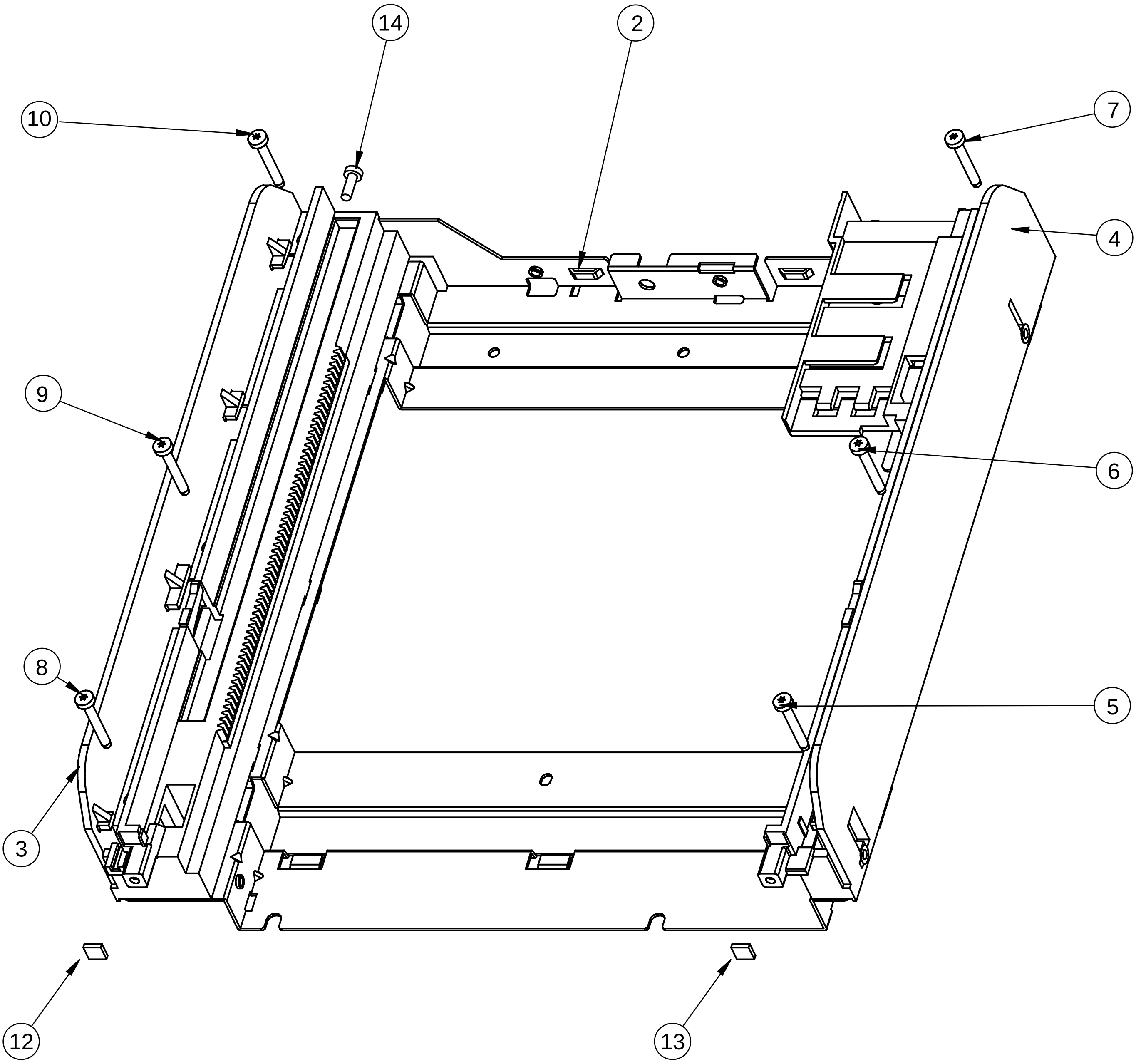


MECHANICAL PARTSLIST 3CDC-99 MODULE

0053	4822 532 12364	WASHER
0073	4822 502 12548	SCREW M2,6X3,5
0074	4822 502 12548	SCREW M2,6X3,5
0080	4822 528 10937	PULLEY
0081	4822 522 10494	GEAR DRAWER
0082	4822 358 10115	BELT
0083	4822 532 12364	WASHER
0084	4822 532 12364	WASHER
0095	4822 404 10985	SUPPORT-VAM
0096	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
0097	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
0100	9305 022 30201	VAM2202/01
0115	4822 466 10736	CAROUSEL
0117	4822 532 12365	BUSH DRAWER
0123	4822 402 11237	SWITCH-BRACKET
0125	4822 401 11708	DISC CLAMP VAM DRIVE 3CDC

ELECTRICAL PARTSLIST 3CDC-99 MODULE

MISCELLANEOUS

0035	4822 361 10753	CAROUSEL MOTOR
0070	4822 361 10753	TRAY MOTOR
1800	4822 265 10925	FFC SOCKET, 15P
1805	4822 265 11533	FFC SOCKET, 23P
1880	4822 276 13503	SWITCH
1881	4822 276 13503	SWITCH
1882	4822 276 13503	SWITCH
8001	3103 308 92020	FLEX FOIL CABLE 23P, 420mm
8005	3103 308 91820	FLEX FOIL CABLE 15P, 95mm

CAPACITORS

2800	4822 126 10053	180pF	10%	50V
2801	4822 122 10466	220pF	10%	50V
2802	4822 126 10053	180pF	10%	50V
2803	4822 122 10466	220pF	10%	50V
2804	4822 124 40769	4,7µF	20%	100V
2805	4822 122 10466	220pF	10%	50V
2806	4822 122 10466	220pF	10%	50V
2807	4822 126 12787	330pF	10%	50V
2808	4822 122 10466	220pF	10%	50V
2809	5322 124 41948	0,47µF	20%	50V
2810	4822 126 10053	180pF	10%	50V
2811	4822 122 10466	220pF	10%	50V
2812	4822 126 12785	47nF	20%	50V
2815	4822 126 13174	33nF	20%	16V
2816	4822 126 12878	1,5nF	10%	16V
2818	4822 126 12878	1,5nF	10%	16V
2822	4822 126 12878	1,5nF	10%	16V
2823	4822 122 33848	47pF	5%	50V
2824	4822 126 12785	47nF	20%	50V
2825	4822 121 51387	10nF	20%	16V
2826	4822 124 80231	47µF	20%	16V
2828	4822 124 40433	47µF	20%	25V
2829	4822 124 21732	10µF	20%	25V
2830	4822 121 51387	10nF	20%	16V
2831	4822 122 10577	3,3nF	10%	16V
2832	4822 122 10577	3,3nF	10%	16V
2833	4822 122 33069	33pF	5%	50V
2834	4822 122 33069	33pF	5%	50V
2835	4822 126 12785	47nF	20%	50V
2837	4822 124 40433	47µF	20%	25V
2838	4822 124 40248	10µF	20%	63V
2839	4822 124 40433	47µF	20%	25V
2840	4822 126 12882	100nF	20%	50V
2841	4822 126 12702	270pF	10%	50V
2842	4822 126 12339	2,2nF	10%	16V
2844	4822 126 12702	270pF	10%	50V
2849	4822 124 40769	4,7µF	20%	100V
2850	4822 122 33197	1nF	10%	50V
2851	4822 124 40433	47µF	20%	25V
2852	4822 126 12785	47nF	20%	50V
2853	4822 126 11585	22nF	20%	50V
2854	4822 126 12785	47nF	20%	50V
2855	4822 122 33519	470pF	10%	50V
2856	4822 122 33848	47pF	5%	50V
2857	4822 121 51387	10nF	20%	16V
2858	4822 124 81151	22µF	20%	50V
2859	4822 121 51387	10nF	20%	16V
2860	4822 124 41596	22µF	20%	50V
2861	4822 124 41596	22µF	20%	50V
2862	4822 124 11912	220µF	20%	6,3V

CAPACITORS

2863	4822 124 11912	220µF	20%	6,3V
2865	4822 126 12882	100nF	20%	50V
2869	4822 126 12785	47nF	20%	50V
2872	4822 126 12785	47nF	20%	50V
2873	4822 124 12233	47µF	20%	25V
2875	4822 126 11585	22nF	20%	50V
2876	4822 126 12785	47nF	20%	50V
2877	4822 122 33848	47pF	5%	50V
2878	4822 122 10466	220pF	10%	50V
2879	4822 126 12785	47nF	20%	50V
2880	4822 126 12882	100nF	20%	50V
2881	4822 124 40769	4,7µF	20%	100V
2882	4822 124 81151	22µF	20%	50V
2884	4822 124 40769	4,7µF	20%	100V
2885	4822 124 40769	4,7µF	20%	100V
2887	4822 126 12882	100nF	20%	50V
2888	4822 124 40769	4,7µF	20%	100V
2891	4822 122 10576	1,8nF	10%	16V
2892	4822 126 11714	4,7nF	20%	16V
2893	4822 122 10466	220pF	10%	50V

RESISTORS

3700	4822 116 83883	470Ω	5%	0,16W
3705	4822 116 83872	220Ω	5%	0,5W
3706	4822 116 83883	470Ω	5%	0,16W
3707	4822 116 83883	470Ω	5%	0,16W
3708	4822 116 83883	470Ω	5%	0,16W
3709	4822 116 52257	22kΩ	5%	0,5W
3711	4822 050 21003	10kΩ	2%	0,25W
3713	4822 116 52257	22kΩ	5%	0,5W
3714	4822 050 21003	10kΩ	2%	0,25W
3715	4822 116 52234	100kΩ	5%	0,5W
3716	4822 116 52175	100Ω	5%	0,5W
3718	4822 116 52283	4,7kΩ	5%	0,5W
3728	4822 116 52283	4,7kΩ	5%	0,5W
3730	4822 050 23303	33kΩ	1%	0,6W
3731	4822 050 21003	10kΩ	2%	0,25W
3760	4822 050 11002	1kΩ	5%	0,2W
3761	4822 050 11002	1kΩ	5%	0,2W
3762	4822 050 11002	1kΩ	5%	0,2W
3763	4822 116 52231	820Ω	5%	0,5W
3764	4822 052 10338	3,3Ω		NFR25
3766	4822 050 21003	10kΩ	2%	0,25W
3768	4822 116 52283	4,7kΩ	5%	0,5W
3769	4822 050 21003	10kΩ	2%	0,25W
3800	4822 116 52291	56kΩ	5%	0,5W
3801	4822 050 21003	10kΩ	2%	0,25W
3802	4822 116 52291	56kΩ	5%	0,5W
3803	4822 050 21003	10kΩ	2%	0,25W
3805	4822 050 21003	10kΩ	2%	0,25W
3806	4822 050 21003	10kΩ	2%	0,25W
3807	4822 050 21003	10kΩ	2%	0,25W
3808	4822 050 21003	10kΩ	2%	0,25W
3809	4822 116 83883	470Ω	5%	0,16W
3811	4822 116 52251	18kΩ	5%	0,5W
3812	4822 053 10228	2,2Ω	5%	1W
3814	4822 116 52191	33Ω	5%	0,5W
3815	4822 052 10478	4,7Ω	5%	NFR
3816	4822 116 83884	47kΩ	5%	0,16W
3817	4822 116 52298	680kΩ	5%	0,5W
3819	4822 116 83883	470Ω	5%	0,16W
3820	4822 116 52289	5,6kΩ	5%	0,16W

ELECTRICAL PARTSLIST 3CDC-99 MODULE

RESISTORS

3821	4822 116 52289	5,6kΩ	5%	0,16W
3822	4822 116 52263	2,7kΩ	5%	0,5W
3823	4822 050 11002	1kΩ	5%	0,2W
3824	4822 050 11002	1kΩ	5%	0,2W
3825	4822 050 11002	1kΩ	5%	0,2W
3826	4822 116 52257	22kΩ	5%	0,5W
3827	4822 050 23303	33kΩ	1%	0,6W
3828	4822 116 52257	22kΩ	5%	0,5W
3831	4822 116 52257	22kΩ	5%	0,5W
3832	4822 050 21003	10kΩ	2%	0,25W
3833	4822 116 52257	22kΩ	5%	0,5W
3834	4822 116 52257	22kΩ	5%	0,5W
3835	4822 052 10338	3,3Ω		NFR25
3837	4822 050 11002	1kΩ	5%	0,2W
3838	4822 050 11002	1kΩ	5%	0,2W
3839	4822 116 52234	100kΩ	5%	0,5W
3840	4822 116 52234	100kΩ	5%	0,5W
3841	4822 116 52283	4,7kΩ	5%	0,5W
3842	4822 116 83884	47kΩ	5%	0,16W
3843	4822 050 23303	33kΩ	1%	0,6W
3844	4822 116 52283	4,7kΩ	5%	0,5W
3845	4822 116 83884	47kΩ	5%	0,16W
3846	4822 050 23303	33kΩ	1%	0,6W
3847	4822 116 83961	6,8kΩ	5%	0,16W
3848	4822 116 52234	100kΩ	5%	0,5W
3849	4822 116 52234	100kΩ	5%	0,5W
3850	4822 116 52276	3,9kΩ	5%	0,5W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10228	2,2Ω	5%	0,33W
3853	4822 116 83883	470Ω	5%	0,16W
3854	4822 116 52175	100Ω	5%	0,5W
3855	4822 116 52175	100Ω	5%	0,5W
3857	4822 116 52191	33Ω	5%	0,5W
3858	4822 116 52257	22kΩ	5%	0,5W
3859	4822 116 52257	22kΩ	5%	0,5W
3862	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52191	33Ω	5%	0,5W
3864	4822 116 52176	10Ω	5%	0,5W
3865	4822 116 52176	10Ω	5%	0,5W
3866	4822 050 21003	10kΩ	2%	0,25W
3867	4822 116 52206	120Ω	5%	0,5W
3869	4822 050 24708	4,7Ω	1%	0,6W
3870	4822 116 52175	100Ω	5%	0,5W
3871	4822 050 21003	10kΩ	2%	0,25W
3872	4822 050 21003	10kΩ	2%	0,25W
3873	4822 116 83883	470Ω	5%	0,16W
3874	4822 050 21003	10kΩ	2%	0,25W
3875	4822 050 21003	10kΩ	2%	0,25W
3876	4822 116 52234	100kΩ	5%	0,5W
3877	4822 050 21003	10kΩ	2%	0,25W
3878	4822 050 21003	10kΩ	2%	0,25W
3879	4822 050 21003	10kΩ	2%	0,25W
3880	4822 116 52219	330Ω	5%	0,5W
3881	4822 050 21003	10kΩ	2%	0,25W
3882	4822 116 83884	47kΩ	5%	0,16W
3883	4822 116 52234	100kΩ	5%	0,5W
3884	4822 116 52276	3,9kΩ	5%	0,5W
3885	4822 116 52234	100kΩ	5%	0,5W
3886	4822 116 83884	47kΩ	5%	0,16W
3887	4822 116 83883	470Ω	5%	0,16W

RESISTORS

3888	4822 050 21003	10kΩ	2%	0,25W
3889	4822 116 83883	470Ω	5%	0,16W
3890	4822 050 11002	1kΩ	5%	0,2W
3891	4822 050 11002	1kΩ	5%	0,2W
3892	4822 116 83883	470Ω	5%	0,16W
3893	4822 116 83883	470Ω	5%	0,16W
3894	4822 116 52191	33Ω	5%	0,5W
3895	4822 116 52176	10Ω	5%	0,5W
3897	4822 116 52175	100Ω	5%	0,5W
3899	4822 116 52175	100Ω	5%	0,5W

COILS

1810	4822 242 10849	CRYSTAL 8,46MHz

DIODES

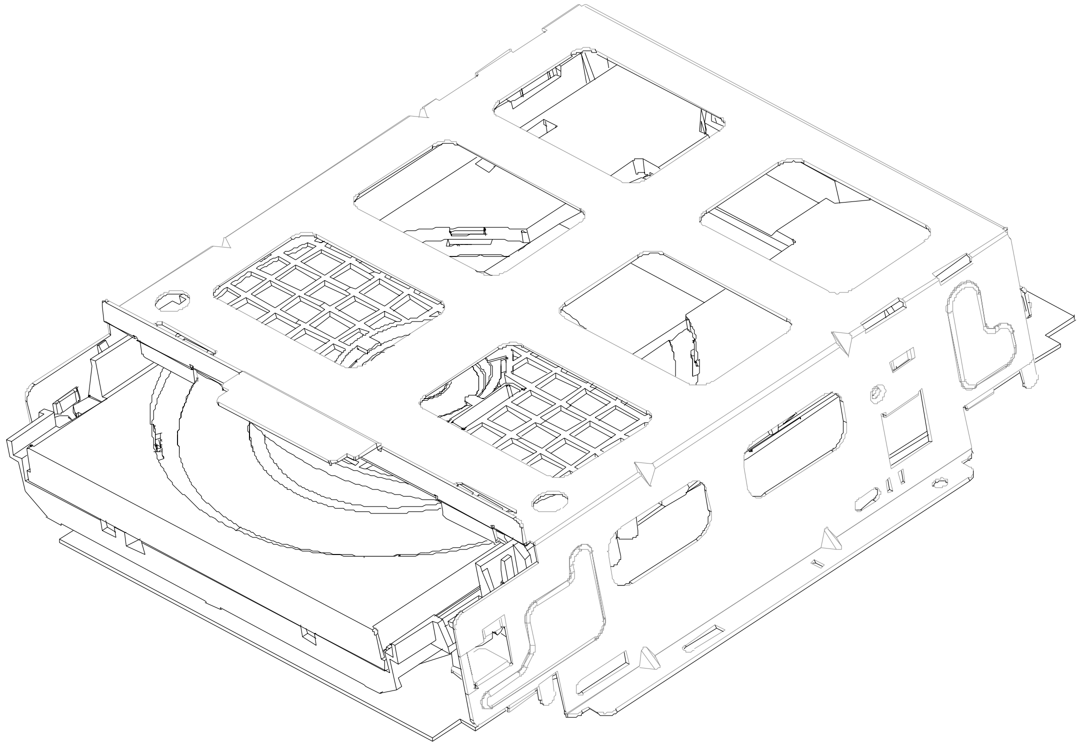
6871	4822 130 30621	1N4148
6872	4822 130 30621	1N4148
6873	4822 130 30621	1N4148
6874	4822 130 30621	1N4148
6875	3198 010 55180	DIO REG BZX79-B5V1
6877	3198 010 53980	DIO REG BZX79-B3V9

TRANSISTORS

7812	4822 130 40959	BC547B
7874	4822 130 40959	BC547B
7875	4822 130 40959	BC547B

INTEGRATED CIRCUITS

7801 ©	4822 209 17286	TZA1024T/N1 HF-AMPLIFIER
7806	9352 628 49112	IC TDA7073A/N4
7807	9352 628 49112	IC TDA7073A/N4
7810 ©	8203 303 11278	D/A CONVERTER PCM1716
7871	9352 628 49112	IC TDA7073A/N4
7873	5322 209 10421	HEF4094BP
7876 ©	4822 209 16143	LC89170M
7877 ©	9352 641 80557	SAA7324H/M2B CD10/M2B
7878	4822 209 72042	MC78L05ACP



CDR99 Module

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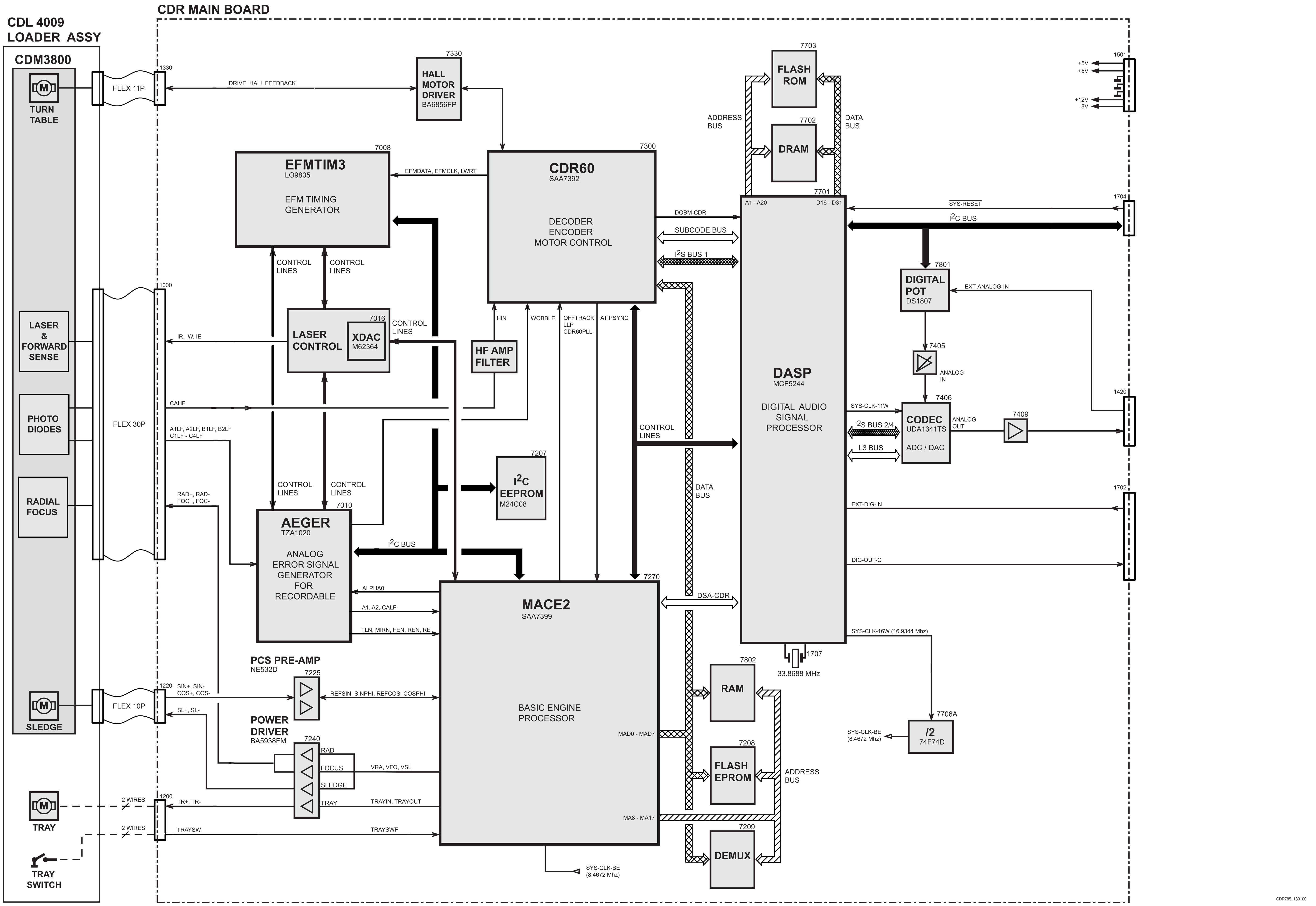
SERVICING HINT

The **CD-R/W module** will be **exchanged completely** in case of a failure. For checking the CD R/W module use the Service Testprogram (chapter 3-4).

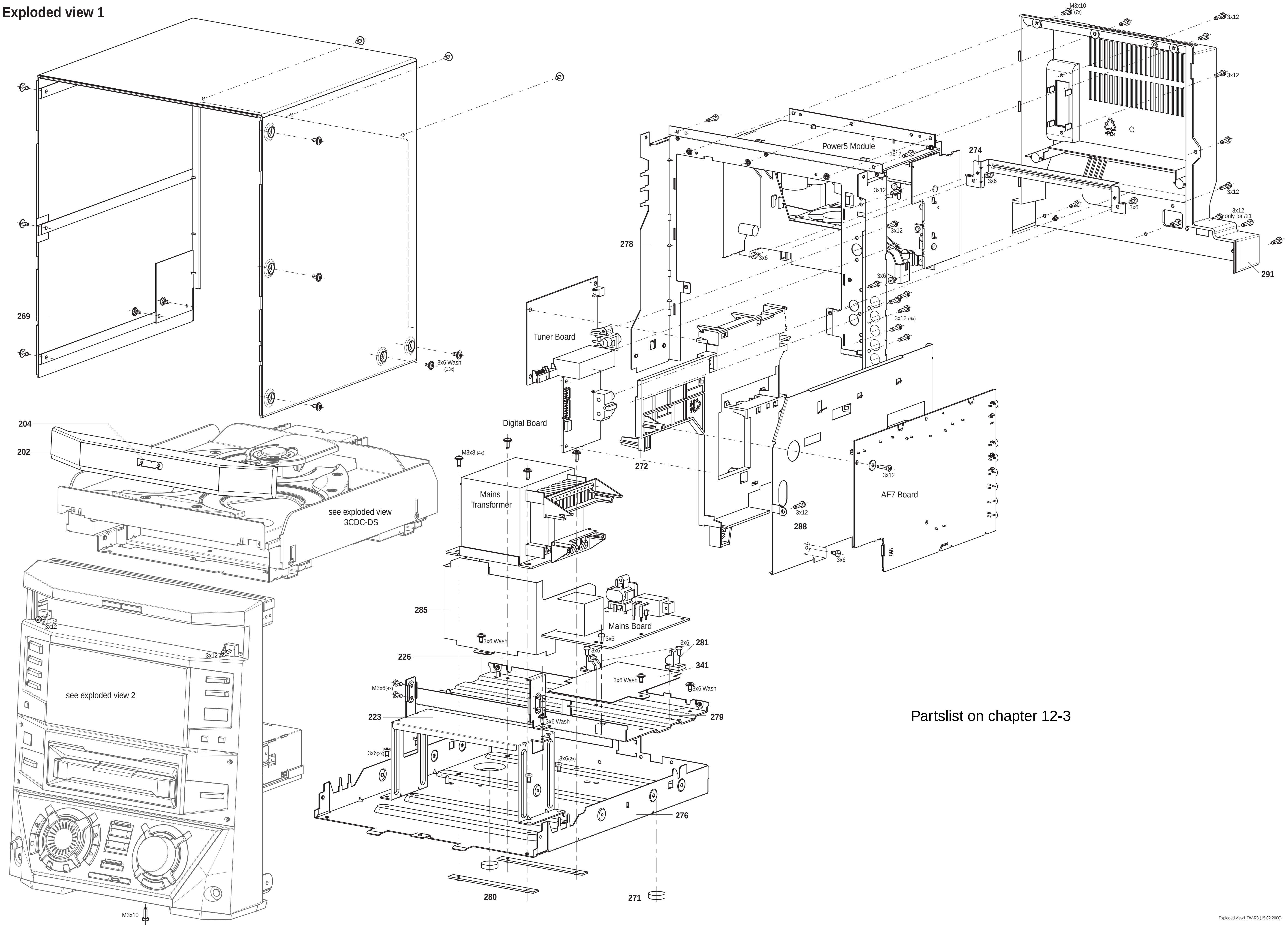
The defective CD-R/W module has to be returned for central repair. Service Code for new Module = **3104129 52590**

Available circuit descriptions:	*The Basics of Compact Disc Recordable/Rewritable*	**4822 725 25242**
	3rd generation Compact Disc Recording	**3104 125 40100**

BLOCK DIAGRAM CDR-MODULE

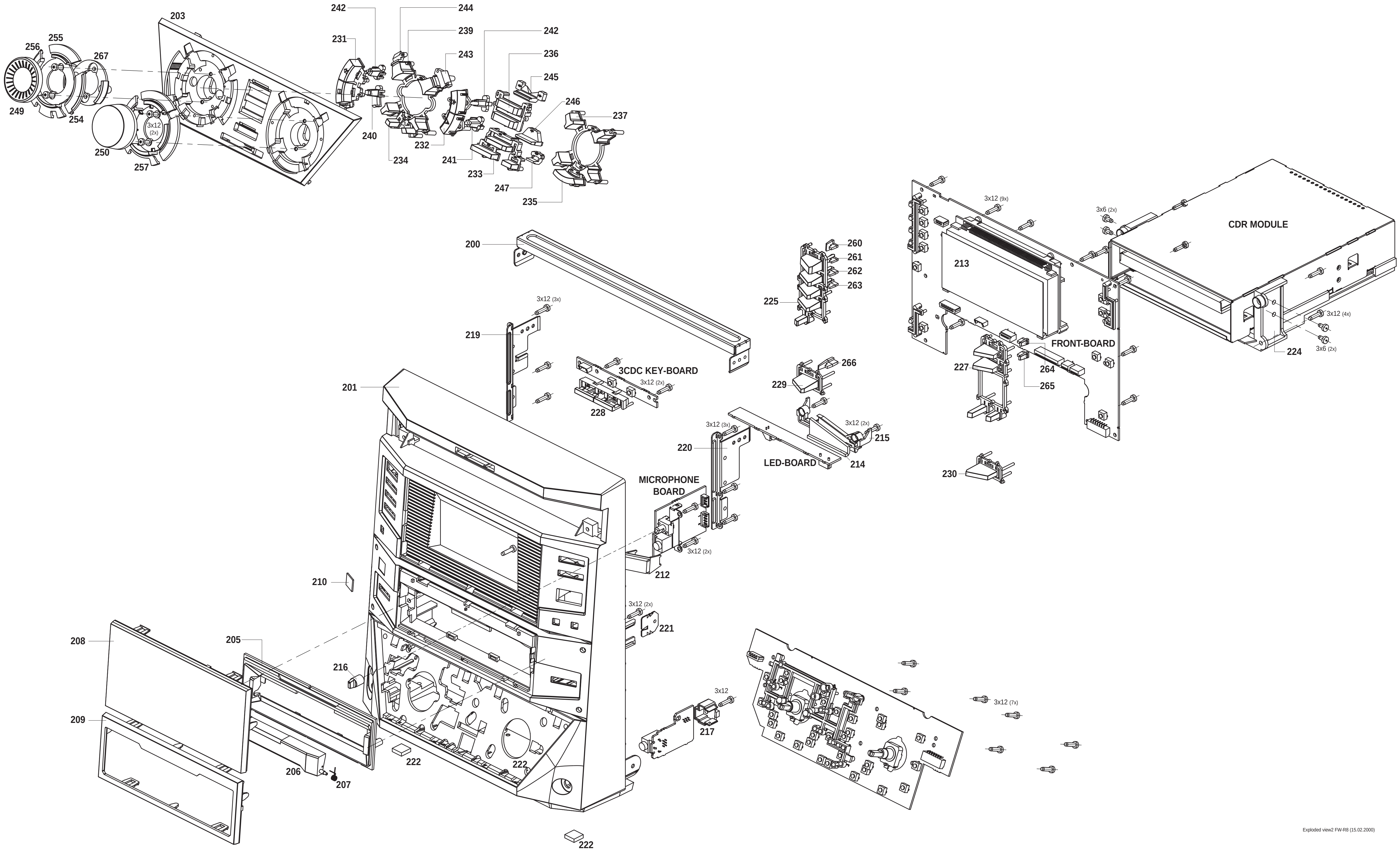

CDR MAIN BOARD
CDL 4009
LOADER ASSY
CDM3800
TURN TABLE
LASER & FORWARD SENSE
PHOTO DIODES
RADIAL FOCUS
SLEDGE
TRAY
TRAY SWITCH
FLEX 11P
FLEX 30P
FLEX 10P
1330
1000
1220
1200
2 WIRES
2 WIRES
DRIVE, HALL FEEDBACK
7330
HALL MOTOR DRIVER
BA6856FP
7008
EFMTIM3
LO9805
EFM TIMING GENERATOR
EFMDATA, EFMCLK, LWRT
7300
CDR60
SAA7392
DECODER ENCODER MOTOR CONTROL
CONTROL LINES
CONTROL LINES
CONTROL LINES
CONTROL LINES
CONTROL LINES
CONTROL LINES
7016
LASER CONTROL
XDAC
M62364
IR, IW, IE
CAHF
A1LF, A2LF, B1LF, B2LF
C1LF - C4LF
RAD+, RAD-
FOC+, FOC-
HF AMP FILTER
HIN
WOBBLE
OFFTRACK
LLP
CDR60PLL
ATIPSYNC
7207
I2C EEPROM
M24C08
7010
AEGER
TZA1020
ANALOG ERROR SIGNAL GENERATOR FOR RECORDABLE
I2C BUS
ALPHA0
A1, A2, CALF
TLN, MIRN, FEN, REN, RE
PCS PRE-AMP
NE532D
7225
SIN+, SIN-
COS+, COS-
SL+, SL-
REFSIN, SINPHI, REFCOS, COSPHI
POWER DRIVER
BA5938FM
7240
RAD
FOCUS
SLEDGE
TRAY
VRA, VFO, VSL
TR+, TR-
TRAYIN, TRAYOUT
TRAYSW
TRAYSWF
7270
MACE2
SAA7399
BASIC ENGINE PROCESSOR
MAD0 - MAD7
MA8 - MA17
SYS-CLK-BE
(8.4672 Mhz)
7703
FLASH ROM
7702
DRAM
ADDRESS BUS
DATA BUS
7701
A1 - A20
D16 - D31
DOBM-CDR
SUBCODE BUS
I2S BUS 1
CONTROL LINES
DATA BUS
DSA-CDR
DASP
MCF5244
DIGITAL AUDIO SIGNAL PROCESSOR
1707
33.8688 MHz
7802
RAM
7208
FLASH EPROM
7209
DEMUX
ADDRESS BUS
1501
+5V
+5V
+12V
-8V
1704
SYS-RESET
I2C BUS
7801
DIGITAL POT
DS1807
EXT-ANALOG-IN
7405
ANALOG IN
7406
SYS-CLK-11W
CODEC
UDA1341TS
ADC / DAC
I2S BUS 2/4
L3 BUS
ANALOG OUT
7409
1420
1702
EXT-DIG-IN
DIG-OUT-C
SYS-CLK-16W (16.9344 Mhz)
7706A
/2
74F74D
SYS-CLK-BE
(8.4672 Mhz)
CDR785, 180100

Exploded view 1


M3x10 (7x)
3x12
3x12
3x12
3x12 only for /21
291
274
3x6
3x6
Power5 Module
3x12
3x12
3x12
3x6
3x6
278
3x12 (6x)
Tuner Board
3x6 Wash (13x)
269
Digital Board
272
AF7 Board
3x12
3x12
288
3x6
204
202
M3x8 (4x)
Mains Transformer
see exploded view 3CDC-DS
285
Mains Board
3x6
3x6 Wash
3x6
3x6
281
341
3x12
3x12
226
3x6 Wash
3x6 Wash
M3x6(4x)
see exploded view 2
223
3x6 Wash
279
3x6(2x)
3x6(2x)
276
280
271
M3x10

Partslist on chapter 12-3

Exploded view 2


203
255
256
267
249
254
250
3x12 (2x)
257
242
244
231
239
243
242
236
245
246
237
240
232
234
241
233
247
235
200
3x12 (3x)
219
201
3CDC KEY-BOARD
3x12 (2x)
228
225
260
261
262
263
266
229
3x12 (3x)
3x12 (2x)
215
220
LED-BOARD
214
MICROPHONE
BOARD
3x12 (2x)
212
3x12 (9x)
3x6 (2x)
CDR MODULE
213
FRONT-BOARD
3x12 (4x)
3x6 (2x)
224
227
264
265
230
210
208
205
216
209
206
207
222
222
222
3x12 (2x)
221
3x12
217
3x12 (7x)

Exploded view2 FW-R8 (15.02.2000)

MECHANICAL PARTS

0001	3103 307 99160	SPEAKER-BOX LEFT ASSY FW-R8
0002	3103 307 99170	SPEAKER-BOX RIGHT ASSY FW-R8
0201	3103 307 98780	FRONT PRINTED
0203	3103 307 98350	ORNAMENTAL FRONT
0204	4822 454 13408	WORDMARK PHILIPS
0205	3103 307 98360	FRAME ORNAMENTAL
0206	3103 304 67260	DOOR CDR
0207	3103 301 06490	SPRING DOOR CDR
0208	3103 307 98430	WINDOW DISPLAY
0209	3103 307 98440	WINDOW CDR
0210	4822 454 13339	ORNAMENTAL PLATE
0212	3103 304 68130	LENS IR
0213	3103 304 68990	CUTSHEET-FTD
0214	3103 304 67810	LIGHT GUIDE CDR
0215	3103 304 68120	HOLDER LIGHT GUIDE
0216	3103 307 98560	KNOB MIC-LEVEL
0222	4822 462 40683	FOOT RUBBER
0225	3103 307 98390	BUTTON SET POWER
0226	3103 301 45270	BRACKET CDR RIGHT
0227	3103 307 98570	BUTTON SET AUX/TUNER
0228	3103 307 98400	BUTTON SET 3CDC
0229	3103 307 98410	BUTTON SELECT CDR
0230	3103 307 98420	BUTTON CDR-OPEN
0231	3103 307 98460	BUTTON SET STOP
0232	3103 307 98470	BUTTON SET PLAY
0233	3103 307 98490	BUTTON SET REC-MODE
0234	3103 307 98500	BUTTON SET TRACK/TEXT
0235	3103 307 98550	BUTTON INCREDIBLE SURROUND
0236	3103 307 98480	BUTTON SET DISC-REC
0237	3103 304 67410	BUTTON SET TREBLE/BASS
0239	3103 307 98450	BUTTON SET JOG
0240	3103 304 67470	LIGHT GUIDE STOP
0241	3103 304 67480	LIGHT GUIDE PLAY
0242	3103 304 67490	LIGHT GUIDE PREV/NEXT
0243	3103 304 67550	LIGHT GUIDE YES
0244	3103 304 68370	LIGHT GUIDE NO
0245	3103 304 67560	LIGHTGUIDE DISC REC
0246	3103 304 68210	LIGHT GUIDE REC-MODE
0247	3103 304 67570	LIGHTGUIDE FINALISE
0249	3103 304 07030	JOG ROTARY
0250	3103 307 98330	VOLUME ROTARY
0254	3103 307 98530	COVER JOG PLAY
0255	3103 307 98510	COVER JOG YES/NO
0256	3103 307 98520	COVER JOG STOP
0257	3103 307 98540	COVER VOLUME
0260	3103 304 67360	LIGHT GUIDE POWER
0261	3103 304 67370	LIGHT GUIDE CD1
0262	3103 304 67380	LIGHT GUIDE CD2
0263	3103 304 67390	LIGHT GUIDE CD3
0264	3103 304 67870	LIGHT GUIDE AUX
0265	3103 304 67880	LIGHT GUIDE TUNER
0266	3103 304 67930	LIGHT GUIDE CDR
0267	3103 304 67540	LIGHT GUIDE JOG ROTARY
0271	4822 462 40683	FOOT RUBBER
0356	3139 228 83640	REMOTE CONTROL, RC2506/01
0385	3104 128 92560	MAINS CORD, UL
0385	4622 004 50290	CORDSET
5001	3103 308 30510	MAINS TRANSFORMER /22
5001	3103 308 30520	MAINS TRANSFORMER /21
5001	3103 308 30530	MAINS TRANSFORMER /37

MISCELLANEOUS

0351	4822 303 50063	FM AERIAL
0351	4822 320 11094	FW ANTENNA WIRE /37
0384	4822 303 50082	AM FRAME AERIAL
8002	4822 320 12335	FLEX FOIL CABLE,17P, 125mm
8004	3103 308 92450	FLEX FOIL CABLE, 6P, 140mm
8006	3103 308 92320	FLEXFOIL CABLE, 7P, 280mm
8009	3103 308 92330	FLEX FOIL CABLE, 5P, 280mm
8013	3103 308 92340	FLEX FOIL CABLE, 5P, 280mm
8014	3103 308 92470	FLEX FOIL CABLE, 19P, 400mm
8015	3103 308 92360	FLEX FOIL CABLE, 4P, 280mm

REPLACEMENTS

	3104129 52590	CD-R/W MODULE